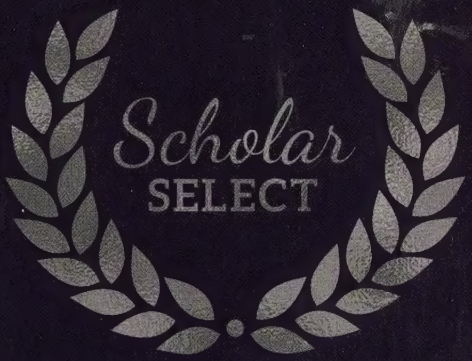
The Lines of Demarcation of Pope Alexander VI and the Treaty of Tordesillas A.D. 1493 and 1494



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THE LINES OF DEMARCATION

OF

POPE ALEXANDER VI.

AND THE

TREATY OF TORDESILLAS

A.D. 1493 and 1494

By SAMUEL EDWARD DAWSON Lit.D. (Laval)

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VII.—*The Line of Demarcation of Pope Alexander VI in A D 1493 and that of the Treaty of Tordesillas in A D 1494 with an inquiry concerning the Metrology of Ancient and Mediæval Times*

By Samuel Edward Dawson, Litt D (Laval)

(Read May 26 1899)

CONTENTS

I.—Introductory 468
II.—Public International Law in A D 1493 470
III.—The Form of Papal Bulls 481
IV.—The Demarcation of A D 1493 484
V.—The First Line 491
VI.—The Treaty of Tordesillas in 1494 and the substituted Line 496
VII.—The Point of Departure 500
VIII.—Ancient and Mediæval Measures of Length 502
IX.—The Lines of Demarcation on the Ocean and their supposed contact with the Northeast Coast of America 517

APPENDICES

A.—The Bull of Demarcation of A D 1493 (*Inter cetera*), collated with the suppressed draft with an English translation 529
B.—The Bull of A D 1493 (*Eximiæ devotionis*) granting to Spain west of the Line the same rights as had been granted previously to Portugal in the east, with an English translation 535
C.—The Bull of Extension of September 25 1493, with an English translation 538
D.—The written opinion of Mossen Jaume Ferrer upon the Line of Demarcation, presented A D 1495 to the Spanish Sovereigns 541
E.—A table of opinions held by the greater Cosmographers of ancient and mediæval times concerning the circumference of the Earth and the length of a Degree upon the Equator 545

1.—Introduction

While during the last five years scholars in the north have been discussing the voyages of the Cabots in the south an acrimonious controversy was carried on by politicians concerning the coasts of Venezuela and Guiana the scenes of the discoveries of Columbus, Hojeda and Pinzon The question has now been settled, but it would seem that civilization has not gained as much, during the last four hundred years, as might have been expected, inasmuch as political recklessness nearly resulted in bringing on a war between the United States and Great Britain Patient statesmanship averted that crime and the controversy was at last referred to a tribunal of arbitration and a great calamity to civilization was prevented

The diplomatic documents cited in support of the claim of Venezuela go back to the very earliest years of the discovery of the New World With the direct question of the boundary between Venezuela and British Guiana now happily settled, the present paper is not concerned but indirect questions were raised, interesting to every student of early American history and therefore, of early Canadian history, for the history of Canada strikes its roots as deep down into the centuries as does the history of any part of the continent Before Columbus touched the mainland near the *Boca de la Sierpe*, Cabot had coasted the shores of Newfoundland and Nova Scotia

The main object of this paper is to elucidate the line of demarcation drawn in 1493 between the Old World and the New by Pope Alexander VI and its modification by treaty the following year. Not much has been written upon this subject in English There is a very excellent article by Prof Edward G Bourne in the *Report of the American Historical Association* for 1891, and a recent volume by Mr Henry Harrisse (*Diplomatic History of America*, London, 1897), full of research as all his books are but beyond these the student must have recourse to other languages than English if he should seek information of value concerning what has been called, somewhat hastily, that "absurd act of assumption" We shall find, on closer inquiry, that we have no right to a patent for the idea of an international tribunal of arbitration There was one in permanent session in 1493, and, by its decision, war was then averted between the two foremost nations in Christendom We shall see, moreover, that although the ownership of half the world was involved war was not then so imminent as it was

recently between England and the United States, not because of anything in dispute between them but on account of a petty territory claimed by a third government and in assertion of a speculative proposition in international law of recent invention and doubtful authorship.

The case for Venezuela was based primarily on the Bull of Pope Alexander and upon discovery. Without entering into the controversy it may be observed that the argument proves too much, for the whole of the present United States fell within the Spanish demarcation and, from where Cabot's voyage ended the whole coast of the Atlantic was first discovered and ceremonial possession was taken for Spain. The British take their title in Guiana from the Dutch, and the United States take their title from the British, so that it is not easy to build an argument on discovery and upon the Bull of 1493 without involving some considerable portions of the United States.

While these questions may however be considered as settled it will interest the student to recall the fact that, in these northern seas, the line of demarcation was supposed to cut our coast and that Nova Scotia and Newfoundland fell to Portugal. This has been incidentally referred to in previous papers but inasmuch as the papal Bulls of 1493 and the Treaty of Tordesillas of 1494 are within the scope of our history, it is not lost labour to inquire what these documents were and what was their meaning.

Nothing is more trite than to insist upon the importance of treating each period of history from its own point of view, but nothing is more difficult. In recent controversies on early American history it has been often forgotten that Western Europe was Roman Catholic when America was discovered and that, although the secular head of the Holy Roman Empire had lost his relative importance, the authority of its spiritual head was still unchallenged. Latin was, in effect, a living language—the living language of the services of the Church and a living language for all educated men throughout Europe. The Romance languages themselves had not diverged so widely as now, either from each other or from their common source, and the barriers of nationality were not raised nearly so high then as they are at the present day. Those who gibbet Sebastian Cabot as a scoundrel and traitor for changing his service, forget that the great sailors of his day changed masters without reproach and that soldiers and statesmen frequently did the same. No one blames Philippe de Comines, who was born a Burgundian subject and served in the council of Charles the Bold, for passing over into equally confidential and important employments

under his mortal enemy, Louis XI of France, but Cabot, an Italian, born in Venice, is judged as if he had been a captain in the French navy who had sought employment from the Emperor of Germany Thus is a misleading anachronism, for the present exaggerated antagonism of nationalities is of comparatively recent growth and received its chief impetus in the religious wars which followed in the sixteenth century

The same tendency to anachronism has affected the interpretation of the old charts If the early sailors had possessed sufficient knowledge they would have made more accurate maps, but they had neither the information nor the instruments necessary, therefore the secret of longitude was hidden from them All their longitudinal distances were calculated by dead reckoning, and the log line, even, was not in use until 1521, but their maps are now often measured in millimetres as if they were the products of an admiralty survey Elaborate arguments have been founded upon the trend of their coast lines, without considering that their maps were drawn to compass bearings, and ours are always drawn to the true meridian The conditions of the age in which they lived made it possible for the sailors of all the western nations to calculate their distances by a uniform customary league, but that league was not the admiralty league of three minutes of the Equator nor the English land league of three statute miles.

The present paper then, although it may have been suggested by the Venezuelan controversy, will not discuss the boundary of British Guiana Its object is to throw light upon our own history by a detailed examination of the Bulls of Pope Alexander VI and the pretensions based upon them The distances specified in the Bull and in the treaty lead to a discussion of the nautical measures of length in use at that time and the Portuguese names still clinging to our coasts bear witness to the belief that the line of demarcation cut the northeastern coast of America, somewhere in the present province of Nova Scotia All these subjects are of interest, since they bear upon the true interpretation of the early maps and the elucidation of the historical geography of our Atlantic coast

II—International Law in 1493

It has been stated by writers of great weight that Grotius laid the foundation of international law as it is now understood. This means that, in the application of the principles of international law, references seldom go further back than to the exhaustive work of Grotius, published at Paris in 1625 It does not mean that international law did

not exist before Grotius, or that he originated its principles. The most cursory glance at his great work *De Jure Belli*, will show that all his illustrations were drawn from Greek, Roman and Jewish history, and it will be found, on perusal, that his principles are derived from natural law or the law of nature as laid down by the Roman lawyers, upon the Roman civil law as found in the *Corpus Juris*, upon the works of the more philosophical of the Christian Fathers, upon the Synodical Canons recorded in ecclesiastical history and upon the Divine law as revealed in the Bible. Grotius does not, himself, pretend to anything else. He was born in 1583, ninety years after the discovery of America, and to attempt therefore to pass judgment on the Bull of 1493 in the light of our present notions, is an absurd anachronism. Grotius goes further, and while justly claiming the merit of his work, refers to authors who had preceded him who, as he says, were "partly Divines and partly Doctors of Law." If, therefore, we put aside the conventional law or treaty law of nations, it will be seen that modern international law is founded on the Roman law and on the Canon law, which latter was carried over all Europe by the Roman Church, for even in England up to the time of Edward III the Lord Chancellor was always an ecclesiastic. In commenting on this point, Sir Henry Maine observes[1] that "it "is astonishing how small a proportion the additions made to inter- "national law since Grotius's day bear to the ingredients which have "been simply taken from the most ancient stratum of the Roman "*Jus Gentium*." This *Jus Gentium* is the law of nature applicable to all human beings, and therefore to nations collectively, and is eloquently said by Cicero[2] to be "That law which was neither a thing con- "trived by the genius of man, nor established by any decree of the "people, but a certain eternal principle, which governs the entire "universe, wisely commanding what is right and prohibiting what is "wrong. Therefore, the true and supreme law, whose commands and "prohibitions are equally authoritative, is the right reason of the "Sovereign Jupiter."

These things being so, it is somewhat flippant for the *London Times* to characterize the citation of the Bull of 1493, in the Venezuela dispute, as "comical" or "absurd." It was good law *pro tanto*, for where else was there, at that time, a court so competent, by learning or tradition, to decide questions which, in their essence, depended on the Roman or Canon law as the Court of Rome? Nor could there, *a priori*, be conceived one more likely to be impartial, for the Pope had no sailors through whom he could discover and claim for himself new lands. Flings at the private character of Alexander VI are only pretexts for avoiding argument. We have to do with him in this paper

only as a geographer and as judge in a court in a secular matter, nor have we even to discuss his authority, because he was at least in this case, a court of consensual jurisdiction The popes could see, as Grotius afterwards saw "such license of going to war as even barbarous "nations may be ashamed of, that men take arms greedily for light "causes or none at all" No one at that time impugned their authority, and why should they have recused themselves from an office or shirked a duty so clearly incumbent on them in their quality as head of the Christian commonwealth?

The conception was, indeed, lofty and most Christian The heart of every earnest thinker must go forth in sympathy to the man who, in the isolation of an autocratic throne, has, in these latter days, dreamed such a dream as the institution of a court of supreme international appeal Such a position the popes did in fact occupy at the period of the discovery of America and, as is pointed out by Bryce[3] "they were excellently fitted for it, by the respect which the sacredness "of their office commanded, by their control of the tremendous "weapons of excommunication and interdict, above all by their ex- "emption from those narrowing influences of place, or blood or personal "interest which it would be their chiefest duty to resist in others" For reasons beyond the scope of our argument this was soon to cease, but in A D 1493, Christendom was still conceived to be an organized body of Christian states, of which the Pope was the spiritual head There was, therefore, an innate fitness in the lawyers and doctors of the civil and canon law at the *Curia Romana* to deal with broad questions of natural and divine law or universal justice extending over independent nations The proceedings at Rome were in matters of international interest, not arbitrary but formal and technical, for there were resident representatives there of all the powers of Christendom During the period of their power the popes had often helped the weak against the strong and had often strenuously laboured for that "truce of God," which, even in present times, can alone avert the impending Armageddon We learn from Sir Henry Maine[4] that Bentham was so impressed with the confusion attending the modern views of right to territories by discovery and occupancy, that he went out of his way to eulogize this very Bull of Pope Alexander, and Maine himself adds that, although praises of any act of papal authority may seem grotesque in a writer like Bentham, "it may be doubted, whether the arrangement "of Pope Alexander is absurder in principle than the rule of public "law which gave half a continent to the monarch whose servants had "fulfilled the conditions required by Roman jurisprudence for the ac-

"quisition of property in a valuable object which could be covered by "the hand."

Modern diplomacy is not in a position to regard as "comical" or "ridiculous" the attempt of the Pope, in 1493, to draw a line of demarcation through the ocean in the interests of peace between the only powers which were then concerning themselves with discovery and extension for translated into the very latest diplomatic form of speech, it was nothing else than the delimitation of "spheres of influence," such as, during the last few years, have resulted in the partition of the continent of Africa. The doctrine of "Hinterland," is the old principle under a new name. It is the principle which pervaded the old charters of the American colonies and made them to extend their claims from sea to sea. As it was then, so it is now. Enormous regions are being marked off upon the map, regions whither white travellers have barely penetrated and containing immense numbers of people who have never seen a European. These are being allotted to one power or another, without any more rational grounds then were the Western or Eastern Indies in 1493, and from time to time a Fashoda incident crops up to demonstrate the absence of any governing principle.

It has been argued that the perfect equality of each sovereign state, without regard to its size or strength, is a modern principle of international law. That however is doubtful, for it seems in the case of weak nations to depend rather upon the mutual jealousies of the greater states. Grotius although, as before stated, he mentioned in his preface the names of some of his predecessors in the field of international law, did not mention Francis a Victoria, a learned theologian of Salamanca, who in two chapters of his work, *Relectiones Theologicæ*, published first at Lyons in 1559, and then at Salamanca in 1565, went far beyond Grotius and even surpassed the writers of the present day in his humane and liberal views. The book is very rare, but Hallam (Hist. Lit. Vol. 2) gives an account of it and there is a more detailed analysis in Salomon's *L'Occupation des Territoires sans Maitre*. The chapters bearing on the present question are those entitled *de Indis* and *de Jure Belli*, and the fact that such views were at that date publicly expressed by an ecclesiastical professor of high repute, is worthy of serious attention. He maintained that the Spaniards had no more right to the Indies by discovery than the Indians would have had to Spain if they had discovered Spain—that, by public and private law, the Indians were as justly owners of their own lands as if they were Christians—that the Indians did not lose their rights because they were unbelievers, since they had not had the opportunity of knowing the true faith—that Jews and Saracens who were hostile to Christianity retained their

lands and that nominal Christian princes did so also, though their morals were often not so good as those of the Indians, and moreover, that God bestowed his gifts, as he made his sun to rise and his rain to fall, upon the evil and the good Proceeding with relentless logic, the learned professor demonstrated that the Pope could have no possible right over the lands of these people, since the dominion of Christ himself was spiritual, and, if they were heathen, then still less would be the power of the Pope over them; for they would not even be subject to his spiritual authority and that no just war could be waged against them on that account These views, as to the power of the Pope in matters purely temporal, held as they were in the great Spanish university of Salamanca, will be referred to later on, but at present it must be observed that he still made out to justify the Bull of Pope Alexander, but by two arguments so modern and "up to date," that they might emanate from a Mission Board at New York, or a board of directors at London If, he argues, these Indians allow the missionaries freely to preach the gospel and meet their efforts only by indifference, they stand in their right, but if they resist with violence or persecute the neophytes, there will be a just cause of war That is the argument for the Mission Boards, but the other is no less happy Every Christian nation, he argued, has an absolute right of commerce with every other Christian nation and to sail its ships along their coasts; that right exists therefore towards every pagan nation as well, and, if resisted, there is also a just cause of war Now we can see the right of the British ships to open the ports of China and the American ships the ports of Japan, but the learned professor of three centuries ago is still in advance of us, for we evade his conclusions by coasting laws and prohibitive tariffs If the Chinese and Japanese had admitted our ships under similar laws one would like to call back the shade of this most excellent ecclesiastic and ask his opinion, whether a prohibitive tariff was not a prohibitive law

The reference of such territorial questions to the Pope was moreover rational, since geographical knowledge was nowhere cultivated with so much curiosity and intelligence as at Rome, because of the universality of the claims of the Roman See The Canon law required the attendance of bishops, at definite intervals, at the Court of Rome, and they were bound to make certain reports through their metropolitans By these channels the Popes became, on geographical matters, the best informed men in Europe

Upon this subject there has been a great deal of *ad captandum* writing, for, while it is quite true that current opinion in the middle ages upon geography was crude and absurd, it is also true that the

doctrine of the sphericity of the earth, as taught by the Greek geographers was held by the greater minds within the Church and never authoritatively rebuked. Herein is the essential unfairness of books like President Andrew D. White's *Warfare of Science*. He holds the Roman Church responsible for the sputterings of Cosmas Indicopleustes. But that irritable religionist was not a churchman by training, and, although in late life he became a monk in Egypt, he was a merchant, a traveller and a sailor for the greater part of his life—he was never a priest. His travels were extensive and his observations upon what he actually saw were valuable; but his *Christian Topography* was written in Greek, in the time of Justinian. To make the Roman Church responsible for his extravagances is not fair disputation. The belief in the sphericity of the earth was by no means general in Greek and Roman times. The Epicureans laughed at it as a vagary of Pythagoras and those who, in all ages, are called "common-sense people," did not believe it any more than Cosmas—though they might have been pagans. In Chapter VII of Plutarch's treatise *On the Apparent Face in the Moon's Orb*, the theory is ridiculed by one of the speakers. No doubt in the middle ages, as in ancient times, the belief was common that the world was flat, but it was not a doctrine of the church. The passage so often cited from St. Augustine[5] merely states that even 'if it be supposed or "scientifically demonstrated that the world is of a round and spherical "form, it does not *logically* follow that the other side of the world is "peopled, seeing that nobody has been there to see and that it may be "all water or, if indeed land, may be bare of inhabitants'. The logic is unanswerable and the general opinion was that there were no antipodes; though Columbus, than whom there never was a more fervent Catholic, held to the contrary. There were two systems current. One held, with Pomponius Mela to the notion of a southern hemisphere separated from ours by an ocean impassable from heat, and the other held with Ptolemy, the belief in a southern continent extending from Africa to Eastern Asia and inclosing the Indian Ocean. During the dissolution and re-crystallization of society there was very little opportunity to think about science and, for the masses, the times were indeed dark; but and the exception is fatal to President White's thesis such science as there was existed in the cloister alone, and that of necessity was the case, for there, in those turbulent days, was the sole refuge for a quiet thinker and in the church was the only career for a man of great intellect but of humble birth, because the highest position in it was not limited by class or race or family. Thus it came about that the church attained such power and that with the exception of our own Alfred, laymen left so slight a record in the world of letters.

There was nothing to prevent them becoming scholars had they been so inclined Albert the Great, Bishop of Bollstadt, lectured publicly at Cologne, and recorded in his writings his belief in the existence of antipodes So did Friar Bacon and, from his writings, Cardinal d'Ailly adopted similar opinions The *Imago Mundi* of d'Ailly was the abiding solace of Columbus in his passionate struggles and it was also the chief source of his cosmological knowledge, since from it, chiefly, he gathered his knowledge of the theories and conclusions of the Greek and Arabian geographers It is not true that the theories of Columbus were antagonized especially by churchmen On the contrary, the Dominican monks at Salamanca were in advance of the lay professors in their scientific views Those who mainly assisted Columbus to obtain access to the Catholic sovereigns were Fray Juan Perez (Franciscan) Prior of La Rabida, Fray Hernando Talavera (Dominican) Prior of Prado and Confessor to the Queen, Fray Diego Deza, Professor of Theology at Salamanca, and Cardinal de Mendoza, who was a minister of the Crown. It was not the scholars nor the churchmen, *qua* churchmen, who opposed Columbus, but the "clear headed practical common sense folk,' of all classes, supported by the men, and they are not all dead yet, who have an infallible gift for finding their own notions in the Scriptures Writing in 1498, from St Domingo to the King and Queen, Columbus expresses his gratitude, "all others," he writes, "who had thought of the matter, or heard it spoken of, unanimously treated it with contempt, with the exception of two friars, "who always remained constant in their belief in its practicability"

It is no part of the object of this paper to discuss the beliefs and dogmas of the church, but it is due to geographical science to say that it is simply untrue that Pope Alexander, as President White asserts, (*Warfare of Science*, Appleton, 1876, p 19) laid down "a line of de-"marcation upon the earth as upon a flat disk," and it will be seen, as we proceed, that it is also untrue that "this was hailed as an exercise "of divinely illuminated power in the church" (p 20) Globes were not in the least uncommon then The year Columbus sailed, Martin Behaim made a large globe still to be seen at Nuremburg Long before that (in 1474) Columbus had sent a globe to Toscanelli at Florence, and we read of a globe before 1497 upon which John Cabot taught his son the properties of the sphere It may readily be supposed that all the globes then in existence are not spoken of in the books It is not necessary to think, moreover, with Mr Harrisse[6] that the Pope was probably basing his partition upon a plane chart, when he sent the Bull to the Spanish monarchs It was quite unnecessary, because the line was clearly enough indicated—north and south, from pole to pole, one

hundred leagues from the Azores or other Portuguese islands. The new discovery of necessity destroyed the value of all previous charts and it was not in the least necessary that the Pope, or his lawyers, should waste any portion of the very short time spent in preparing the Bull in measuring off a hundred leagues upon a chart of any kind. As for President White's flat disk, the very words of the Bull, "from the Arctic pole to the Antarctic pole," preclude the notion.

Again the popes were in geographical questions, of necessity in advance of their age, for, during the thirteenth and fourteenth centuries, they had been sending envoys—simple monks for the most part—to the far east to the Tartar emperors, who had broken down the barriers of Mohammedan exclusiveness and in that way their knowledge of the world had been greatly extended. Moreover they favoured geographical study. The first translation of Ptolemy into Latin, in 1409, was dedicated to Pope Alexander V. Pope Nicholas V commanded the first translation of Strabo, and the first printed edition was dedicated to Pope Paul II. In 1478 the first complete edition of Ptolemy was published and it was printed at Rome and dedicated to Pope Sixtus IV. Æneas Sylvius afterwards Pope Pius II. wrote a work on cosmography and a copy still exists with annotations on the margin in the admiral's own handwriting. The *Decades* of Peter Martyr are mostly letters to popes to keep them informed of the discoveries being made by Spanish and Portuguese sailors. For these and many other reasons a question of cosmography could, at that time, be decided better at Rome than anywhere else.

Whatever be their form, the true nature of these Bulls is an award and not a donation, for they are all drawn subject to a right by discovery. The respective "spheres of influence" of Spain and Portugal were delimited, but the grant to Spain is made "upon condition that "no other Christian king or prince has actual possession of the islands "and mainlands found or that shall be found" before the Christmas last past. Nor need the learned President take exception to the words, "of our own free will and certain knowledge and in the plenitude of "our apostolic power." There are similar words in all documents of that nature by others than popes, for instance, in the patent and ratification of privileges to Columbus (April 23, 1497), after stating in the preamble that the power of the sovereigns is derived from "God alone, "whose place they supply in temporal affairs," the grant reads "of our "own proper motion, certain knowledge and royal absolute power." The wording is nearly identical and so is the material form: for it is a lay Bull, "sealed with a *leaden seal hanging by threads of coloured silk*." The principle is the same in the wording of such documents even now.

The authority is usually referred to and in a republic would read—in virtue of the authority committed to me by the people, etc, etc It is merely the substitution of the will of the majority for Divine Providence

In despite of the form of donation it will appear that, even in those days, the title went by discovery. The reason of the request for the special Bull is shown later on and we learn from Herrera that, when asking for it, the Catholic sovereigns did not compromise their prerogative, but stated that "most learned scholars in Spain thought "that the application for a grant of territory already in their possession "was unnecessary" No other decision was open to the Pope, seeing that Spain gave clear proof of discovery and of possession taken These circumstances are recited in the Bull In those days, title by discovery required a formal taking possession in the name of the sovereign with ceremonies, frequently of a religious character, as well as by unfurling and saluting a flag There has been very little change in succeeding years As the European nations began to overflow and unoccupied regions were seized the extent of territory covered by a settlement grew narrower but the presently existing doctrine of "effectual occupation" was not formulated until the conference at Berlin in 1884, when Germany waked up to the fact that the world had been almost occupied while she had been busy in consolidating her national unity There is not so much "presumption" in the Bull as in the charter of Henry VII to Cabot three years later He granted power to "saile to all parts, "countreys, and seas of the East, of the West and of the North, to "seeke out, discover and finde whatsoever isles, regions, etc, of the "heathen and infidels whatsoever they be and in what part of the "worlde soever they be" Then Henry gives the grantees power to "subdue, occupy and possess all such townes, cities castles and isles of "them found, which they are to occupy and possess as our vassals, etc "giving unto us the rule title and jurisdiction of the same villages, "townes, etc, and firme land so found" and in the same lofty style Henry disposes of the regions to be discovered as if they were his property or his by right of his Crown An unprejudiced comparison will compel the admission that Pope Alexander was the less "arrogant and presumptuous" of the two; for he at least assigned a defensible reason, namely, the conversion of the infidels and the carrying of the gospel into all lands This in fact, it was his proper function to see to, for he was at the head of the only mission board then in existence For centuries after it was not thought that a non-Christian people were capable of sovereignty and proprietorship Indeed, the question is hardly settled yet in the case of pagan nations I am not discussing the principle. I am simply asserting that it still survives, and that in

the light of many occurrences in the Pacific and in eastern seas. it might be well to examine our own consciences without dissembling before throwing stones at Pope Alexander on this account

While arguing for the validity of the Bull of 1493 the Venezuelan counsel have greatly overstated the submissiveness of the English monarchs of those days and the historical instances of Mr Harrisse, whose *Diplomatic History of America* seems to have been prepared for the case, have led them into error While it is true that the Bull *Laudabiliter* is authentic, it is necessary to read it in its own terms, when it will appear, as Dr Lingard long ago observed, that the Pope Adrian, by this instrument, avoids the usual language of feudal grants, he merely signifies his acquiescence in the king's project, he is willing that Henry should enter Ireland and *be acknowledged as "Lord by the natives.'* The submission of Henry cited as having occurred at Avranches is not accepted as historical by English authorities, but even if the circumstance actually occurred, as stated, the agreement is admitted to have been a private one by those who assert that it was made Being then, at the utmost, secret and made without the consent of the barons, whatever binding effect it might have upon Henry himself, it was invalid as against the realm of England

An intimate knowledge of the laws and ceremonial language of Spain has probably prevented Senor Rafael Seijas from incorporating Mr Harrisse's sixth chapter in the "case" He could not take so seriously the oration of filial allegiance and submission in which the envoys of Ferdinand and Isabella, on an errand of congratulation to the newly elected Pope, 'lay at the feet of His Holiness, all they possess on "earth and on the seas, not only their kingdoms, treasures, fleets and "armies, but also their sons and royal persons' This must be taken to mean only obedience in spiritual matters Mr Harrisse's ideas of the relations between the temporal and spiritual powers would have shocked every lawyer and statesman in Spain and nine-tenths of the clergy also

It would lead me from my theme to discuss a subject so vast in its literature and so important I shall, however, enable the reader to form, for himself, an opinion as to the extent of the submission in strictly temporal matters of the monarchs of those days by letting them speak for themselves The following is an extract from a letter by William I, who had just conquered England, to Pope Gregory VII — the great Hildebrand of Canossa memory—and William had received a consecrated banner for his expedition from Gregory's predecessor

"To Gregory, the most excellent Pastor of the Holy Church, William, by "the grace of God King of England and Duke of Normandy, sends health and "friendship

' Your legate, Hubert, religious father, has admonished me on your part to ' do homage to you and your successors and to think better of the money which " my predecessors were accustomed to send to the Roman Church Of these ' demands one I have granted, the other I have refused Homage I would not ' nor will I do For I did not promise it myself nor can I learn that it was ever " done by my predecessors to yours," etc etc

Then he promises to send the usual money

The next letter is from the barons of England to Pope Boniface VIII. (the writer of the "Unam Sanctam") who had declared that Scotland was a fief of the Holy See and had summoned Edward I to desist from invasion and plead the matter in the Roman Court

' To the most holy father in Christ, the Lord Boniface, by divine Providence, ' chief bishop of the Holy Roman Church, John, Earl of Warren, and one hun- ' dred and five other barons, send greeting

It is well known to us and to many others, most holy father, that the ' kingdom of Scotland never did, nor does by any right whatever belong, in " temporals to the Roman Church Nor have the Kings of England, on account ' of the independent pre-eminence of their royal dignity, and a custom at all " times inviolably observed, ever pleaded, or been bound to plead, with respect to ' their right to the kingdom aforesaid or to their other temporal rights, before " any ecclesiastical or secular judge whatsoever " etc etc

The barons then go on to say that even if the king were disposed to plead they would not permit him to do so, as it would be to ' the ' manifest dishersion of the rights of the Crown of England and sub- ' version of the laws, charters and customs inherited from their " fathers "

In the face of these two letters the argument as to the submission of the English kings based by the Venezuelan counsel on Mr Harrisse's book falls to the ground One more letter and this, from the very King Ferdinand the Catholic, who sent the embassy of obedience to which Mr. Harrisse devotes a chapter, will suffice to show the difference between obedience in temporal and in spiritual matters Ferdinand was King of Naples as well as of Aragon, and the Pope had served upon his vice-roy at Naples, a Brief without sending it first to be examined and receive the royal *placet* before publication, according to the fundamental laws of these kingdoms The King writes to his vice-roy and after reciting the circumstances, he continues

" All this has not a little excited our anger and indignation, and we are " equally surprised at and displeased with you, that considering the importance " of the case and the prejudice which our royal dignity suffered from the act of " the apostolical messenger, which is a violence against all right, never practised " against any king or victor of my kingdom," etc, etc

Then, after expressing his indignation that the Pope's messenger had not been instantly hanged, the King goes on to show how the act might be cancelled, as follows —

'You must also use all possible diligence to seize the messenger who pre-
'sented the said Brief if you can get hold of him he must retract the presenta-
'tion which he made you of the Brief and renounce it by a formal act after
'which you will have him immediately hanged' etc etc

These letters cover the period of the greatest height of papal power, and it is strange that a Venezuelan statesman familiar with the fundamental law of Spain could have fallen into such an error Mr Harrisse has evidently not turned his attention to this branch of history for he wrote in 1892 in his *Discovery of America* (p 54) 'Nay, whenever a new pope was elected all the Christian kings had 'again to do homage for their possessions, old and recent" It is a surprising statement Claims were in past ages sometimes made by popes and extremists whom Dante (*De Monarchia*) calls "decretalists. but no such general claims as these extending to all kingdoms were made and beyond doubt, no such acts of homage were ever performed

Although the remarks immediately preceding may seem to lead away from the main subject, they do not in reality It is necessary to clear away these misconceptions concerning the early documents of our history The Venezuelan dispute was not settled by the Bull or by the principle of discovery, but by the occurrences of the Dutch occupation In 1875, the dispute between Spain and Germany for the Caroline islands was referred to Pope Leo XIII, and he decided for Spain, but he did not go upon the title by discovery, nor did he even allude to the Bull of his predecessor He based his award upon repeated acts of occupation by Spain down to the very moment the dispute arose In 1493, circumstances were very different and while we must take exception to such statements as the preceding concerning the submission of European princes generally or English princes specially, in temporals to the Roman See, we must concede to the Pontiffs a position as international judges if upon no higher ground than upon the ground of consensual jurisdiction

III—The Outward Form

Before proceeding to consider the papal Bulls bearing on this question it is necessary to dwell for a moment upon the outward form of these documents, because, in Protestant countries, vague notions often prevail concerning them and also because, in his *Diplomatic History*, Mr Harrisse has treated these American Bulls so incautiously as to throw new stumbling blocks in the way of a student of American history

The official decisions of the popes were for the most part set forth in two forms of equal authority—Bulls and Briefs—and this was the

case whether the subject were a dogmatic deliverance upon a matter of faith a direction on a question of discipline, the creation or modification of an institution, or a decision in a secular matter as in the present case It is inaccurate to call these American Bulls "privileges ' issued in the particular form of the small Bulls, called by the pontifical chancery *litulı* or gracious acts'[8] This is to confuse things essentially different. A *privilege* in canon law is, by its very name, a private or particular law, according a favour to some person or institution, as, for instance, to a monastery or church ' *Dicitur lex,* ' *non*[9] *quia privilegium est lex, sed quia quamdiu durat instar legis* ' *observari debet dicitur privata quia non facit jus quoad omnes* A *titulus* is something still different, and is a presentation or right to a benefice or a church A privilege or title might, indeed, be in the form of a Bull, but whether the Bull was a small one or not, would depend upon the bulk of the subject matter, and, on the other hand a small Bull might be of exceeding importance The Bulls referred to in this question are public laws, international decisions involving an inchoate right to half the world They cannot be called "privileges,' still less "titles " and to call them 'small Bulls' in any sense is an error, as the reader will see on reference to them in the appendix A still greater confusion is caused by Mr Harrisse's explanation of the word *litterae* He says,[10] in relation to the Bulls described later as A and B, "The pontifical privileges were often accompanied by a second *littera,* shorter than the first, and of which it was, in fact, the noti- ' fication ' and again referring to the Bull *Eximiae,* he says [11] "This *littera* was not exactly an abridgement of the primary Bull, resembling, for instance, the abstracts of testaments grants, bills of sale, or conveyances which our recorders deliver constantly " This is very misleading, for the word *littera* is general and covers all written communications Nor is it correct to say that the 'pontifical chancery drafted anew important Bulls in condensed form, which were ' transcribed in full in its registers and were legalized not simply as true copies but as authentic originals [12] That would be equivalent to a legislature passing two acts covering the same subject, a long and a short one, and making both original and authentic Moreover, there could be no ' papal Bulls for common use [13] "carried round on maritime expeditions' to be shown while both the larger and "condensed originals" were retained in the archives This very singular error seems to have been suggested by a clause in the Bull *Eximiae* as follows

' But forasmuch as it would be very difficult for the present letters to be car- ' ried to all such places as may be expedient, we will, ' etc , etc , ' that to copies " of these presents, signed by a public notary, employed for that purpose and

"provided with the seal of some person endowed with ecclesiastical dignity, or "with that of an ecclesiastical court the same unquestioned faith shall be given, "in a court of justice or without, or anywhere else, as to these presents if they "were shown or exhibited

This clause is customary in Bulls or Briefs which are intended for wide circulation and will be found also in *Inter cetera* It is so common that in some *Bullaria* the first words alone are given "*Verum tamen difficile foret, etc, etc*, with a note on the margin to the effect that faith is to be given to copies A clause almost in the same words occurs at the end of the encyclical of the present pope concerning the Jubilee which appeared in the newspapers a few months ago

These two forms of expressing the decision of a pope vary in outward appearance A Brief commences with an abridged formula The name of the Pope is prefixed and the words, "*ad perpetuam rei memoriam*" then it continues on with the main subject matter It is written on paper, in a modern style of handwriting, dated according to the modern calendar and sealed in red wax with the "fisherman's ring

A Bull, although it possesses no greater authority, is more formal in its salutation and more solemn as will be seen on reference to appendix A "*Alexander, episcopus, servus servorum Dei, etc etc* It is written on parchment and (until recently) was in an antique style of characters It is dated according to the old Roman calendar but the essential note is that the seal is of lead (it might be of gold) stamped on one side with the effigies of SS Peter and Paul and on the other, with the name of the reigning pope The seal is attached by strings of various significant colours There are other points of difference, but the above are the most striking

It is of the essence of a law of any kind, and before all others of these pontifical laws which bind the conscience, that they shall be published or promulgated A secret law is not a law in any sense of the word Until it is promulgated it does not exist as a law and binds no one It will be seen later how this fundamental principle has been entirely overlooked, and this is the more surprising inasmuch as by the laws of all Catholic countries in those days, every Bull Brief or public letter of the popes had to be presented to certain royal officers and receive the royal *placet* or *exequatur* before being published or even communicated to any other person whomsoever The extract given on page 480 from a letter to his vice-roy by King Ferdinand the Catholic, will set this matter in a very clear light In that way monarchs guarded their prerogatives, for a Bull not promulgated in a country did not bind there To get over this difficulty it was maintained by some

canonists that a Bull was sufficiently promulgated by being affixed to the gates of the Vatican and proclaimed in the piazza of the[14] Campo di Fiori at Rome. This was said to be publication *in urbe et orbi*. That was disputed by others, but without wandering into a disputed question it may confidently be affirmed that a Bull unpublished and unknown to the persons whom it was intended to bind wanted that essential quality which brought it into life and force.

Now while a Bull was in this inchoate state, it might be entered on the secret register of the Vatican and might be complete in form, but before promulgation, it was still open to modification. It might be found on final examination that the instrument was not drawn in precise accordance with the will or instructions of the Pope or some omission or error might be pointed out by the person who had petitioned for it. In such a case (and it is not at all an uncommon one) a new Bull would be drafted and it also would be entered at its proper date upon the register while the first would never appear. This as will be shown was what occurred in 1493 and recent researches having after three hundred and fifty years unearthed the first draft a controversy has arisen most perplexing to students.

These documents Bulls or Briefs are known, and always cited by the first words after the salutation. The present paper is chiefly concerned with two—the *Eximiae devotionis* dated May 3, and the *Inter cetera* dated May 4—both of 1493. It will at once be seen therefore that it is paradoxical to write of two Bulls *Inter cetera* as issued on two successive days of the same year covering the same subject matter. It is like quoting two statutes on the same subject of the same chapter, of the same regnal year identical in their wording save in two or three sentences. One of the chief objects of this paper is to clear up this apparent difficulty. It has been brought forward very prominently of late and magnified rather than explained.

IV.—The Demarcation of 1493

On May 4, 1493, Pope Alexander VI promulgated the Bull, known from its first words as *Inter cetera*, in which he delimited, by a line drawn from pole to pole, what would now be called the 'spheres' of influence of Spain and Portugal. The Bull was sent to Spain by a special messenger. It was received by the Catholic sovereigns and acted upon. A copy was despatched to Columbus, then preparing for his second voyage and another to Friar Buil, who was going with him to superintend the missions. It became the subject of innumerable discussions. Copies were made at the time and authenticated by eccles-

astical authority, the original was deposited in the archives of the Indies at Seville where it remained until within very recent years, it has been printed in all the *Bullaria* referred to and cited in all the books. For three hundred years, no suspicion of any other *Inter cetera* arose in the minds of the numberless officials, annalists and historians, who administered American affairs or wrote on American subjects.

In the year 1793 Juan Baptista Munoz, who had been entrusted by the King of Spain with the task of writing a history of the New World, and to whom the archives of the kingdom had, for the first time, been thrown open, found, at Simancas, a document in the form of a Bull commencing with the same words *Inter cetera*, but dated May 3, (*quinto nonas Maii*) the day before the historic Bull, which bore date *quarto nonas Maii*. The two documents were, for the greater part of their contents, in identically the same words. In appendix A is printed the full text of the historic Bull of May 4, and all the words which are not in the Simancas document are printed in italics. On the other hand all the words in the Simancas draft which were omitted in the Bull as promulgated are given in the footnotes, with references to the places from whence they were dropped. The reader has, therefore, practically both Bulls before him.

The discovery of the Simancas document gave rise to much speculation. Humboldt gave[1] a partial collation of the two Bulls and expressed surprise without offering an explanation. Washington Irving referred to both and did not attempt to reconcile them, but he gave the dates, erroneously, as May 2 and May 3 respectively. Munoz quoted the historical Bull containing the line, but he gave May 3 as the date. In his paper in the *American Historical Report*, Prof. Bourne gives a partial collation of the two, and Mr. Harrisse in his *Diplomatic History* has brought the difficulty into strong light, and has moreover increased it by treating the unpromulgated Bull as the primary one and as a valid and efficacious document. He calls it a "privilege," and says 'apparently within the twenty-four hours' after its publication. Alexander published the other. One of the chief objects of this paper is to show that the Simancas Bull, having never been published, never had the breath of legal life and also, by comparing the two documents, to explain the duplication by internal evidence.

The Bulls which Mr. Harrisse in his *Diplomatic History* brings under review, are four in number; he has lettered three of them as follows for ready reference:

A *Inter cetera* of May 3—the Simancas, unpublished Bull.

B *Eximiæ devotionis* of May 3

C *Inter cetera* of May 4—the promulgated Bull of demarcation—the historic Bull

And the fourth may be lettered D

It is a Bull known only in a Spanish translation made sixty years after its supposed date and entitled *Extension de la concesion y donacion Apostolica de las Indias*

These four documents, if all thrown together, are conflicting, but a careful examination will eliminate A as an unpromulgated document which never had a valid and legal existence, and show that D does not affect the argument in the first place, because no original copy has ever been found or proved to have existed, and second because, even if it were a valid document, it adds nothing to the real Bull, being only an explication of what had already been enacted There will then remain B and C and these will be found, not only to harmonize but to supplement each other and to form, when taken together, a logically consistent whole such as the expert lawyers of the *Curia Romana* would not be ashamed of

While it may be held by extremists, in opposition to the great majority of canonists and the unanimous opinion of civil lawyers, that a Bull when affixed to the gate of the Vatican and proclaimed on the piazza of the Campo di Fiori was sufficiently promulgated to bind the consciences of all Catholics, no one has yet ventured to assert that a Bull never published at all, at Rome or anywhere else, had any efficacy whatever One well known instance there used to be of a Bull being published annually in that way at Rome because it was not admitted to publication elsewhere in Europe, but that was a very exceptional case which proves the rule and the arguments from it have no validity here for this was a decision not on dogma or discipline, but in a boundary question, which Spain had applied for and, of necessity, it had to be notified to the parties concerned who were fitting out expeditions and extending discoveries into all seas In this case, local publication was of the very essence of the matter but the Simancas document lay unknown and unsuspected for three hundred years until Munoz found it in 1797 It does not in the least validate the document to say that when the present pope opened the archives of the Vatican both Bulls were found on the secret register of Alexander VI There was no doubt an intention to issue that dated May 3 but the entry of the next day cancelled it and that without mention, because the first draft was never uttered In fact the very thing the Catholic sovereigns had asked for to wit, the line of demarcation, had been entirely lost sight of and therefore, the instrument was of necessity drafted anew The subject matter of the petition was then inserted and matter duplicated

in another Bull was omitted. The case is not parallel to that of the preparation of dogmatic Bulls, but is parallel rather to a copy of the judgment of some high civil court in which errors may be found on examination before publication, and the Spanish envoy on looking into the first document could easily see that what his master had specially asked for was not there.

With regard to the *Eximiae devotionis* (Mr. Harrisse's B) he is undoubtedly right in taking it to be a real Bull, but it is misleading to call it a 'privilege,' and it is a *littera* in no other sense than other written communications are *litterae*. The historians he refers to (without mentioning their names) who take the Bull to be "a simple invoice sent with Bulls A and C" when they were sent to Spain," must have wandered from some shipping business into the regions of history and canon law. Mr. Harrisse explains that it was not like an "invoice" or an abstract of a "grant" or "testament" or "bill of sale" or "conveyance." It was not "exactly an abridgment of the primary Bull," it might, he thinks, be called "a papal Bull for common use." It certainly was very far from being any one of these things. It was simply a deliverance of the Roman court in the usual form of a Bull and, as will appear on reading it in appendix B, it had a clear and distinct meaning, and the sentence in it "*prout in nostris inde confectis litteris plenius continetur*" refers to the line of demarcation intended to be in Bull A but omitted. When the Bull was redrawn, the next day, as Bull C the clause omitted was inserted, for that missing clause of demarcation was the essential motive of the whole transaction. The Roman chancery was as Mr. Harrisse observes, evidently hurried beyond its usual leisurely pace.

The date of this Bull (B) is May 3—the same date as that of the unpublished Bull. It is not met with in the ordinary books, and has therefore, been given in appendix B. Mr. Harrisse has given it in an English version. In appendix A of this paper is, as has been said, a copy of Bull C—the historic Bull. If the reader will omit all the words in italics and read into it all the words in the footnotes, in their places as marked, he will reconstruct the text of the rejected draft. He will see that the draughtsman erred in two directions, first by making mention of the rights of Portugal which were to form, and did form the subject matter of a separate Bull (B) and, second, by omitting the judgment of the Pope delimiting the territories of the two crowns. The re-drafting of the Bull made the correction in both directions, for upon a careful comparison, it will appear that the matter dropped from the first draft (Bull A) which is all shown in the footnotes in appendix A, refers solely to the rights of Portugal and is nothing else than what is given in Bull B *Eximiae devotionis*, while the italicised

passages contain the inserted matter which was in effect the cardinal point of the whole movement The two documents A and B, in fact overlap while the two documents B and C are supplementary and form a logical and consistent whole The Bull C distinguishes the respective spheres of action of the two crowns, and the Bull B gathers up all the rights which in previous Bulls had been conceded to Portugal in its sphere, and by one enactment without detailed recital, confers them upon Spain to be enjoyed solely in her own then definitely assigned sphere In that way the two powers would be kept from coming into collision and the whole mass of prior legislation for Portugal, which extended over fifty years and was very voluminous, was enacted for Spain in a few sentences—by a device very common in drawing up legislation This Mr Harrisse has not observed for he says 'apparently within the twenty-four hours which followed the publication "of the two Bulls Alexander VI, May 1 published a third—Bull C' and then he proceeds to call it the second *Inter cetera* This is underrating the Roman Chancery Such blundering would not have passed in a village municipality, for it was issuing two enactments of the same title and mainly in the same language within twenty-four hours This Bull C is the only Bull of demarcation recorded in all the *Bullaria* referred to in innumerable documents and the theme of numerous writers for three hundred years while what Mr Harrisse calls the 'primary Bull" mouldered unknown in the archives of Simancas

In continuation of his remarks upon this Bull C Mr Harrisse says We know by the *Codex Diplomaticus* that there was attached to "that Bull a leaden seal fastened with silk strings, red and saffron "colour Beyond doubt, for these as has been shown are the marks of a genuine Bull and in a Bull of grace the seal is always attached with strings of coloured silk Following the *Codex* further, we find that Peter Garcia Bishop of Barcelona on July 19 1493, testified that he 'had held, handled seen and diligently examined these apostolic "letters of our most Holy Father and Lord in Christ Alexander VI, "by Divine Providence Pope from which hung his true Bull of lead "with threads of silk of a red and saffron colour according to the style "of the Roman court, sound and entire in their marks not vitiated, "nor erased nor in any part suspicious, but free from any doubt whatever' Then he proceeds to give a copy of the Bull (as in appendix A) It was then at Barcelona and the Bishop had an official copy made and verified in the presence of certain named ecclesiastics and especially of an apostolic notary who was secretary of the Bishop of Seville This copy was again collated with the original at Seville on Dec 30, 1502, in the presence of witnesses The whole is certified to by a

notary apostolic with formalities unnecessary to repeat There can, therefore be no doubt as to which document is the 'primary Bull

If the Bulls B and C are considered together it will be seen that no injustice was done to Portugal The very mention of her rights *en bloc* in the *Eximiae devotionis* and the grant of the same rights to Spain in a different sphere confirmed them Nothing was awarded to Spain, but what she had discovered and what she might discover beyond a certain line The monarchs were not misled by the formal phrases which scandalize modern writers as being 'arrogant and presumptuous" The decision is in the form of an absolute gift "We of our own motion, ' and not at your solicitation, nor upon petition presented in your name," when every one knew that the Bull was issued at the request of Spain In like manner in 1732, King George II granted the charter of Georgia to his petitioners, "of our special grace, certain knowledge, ' and mere motion, while the territory granted had been discovered and was disputed by Spain What the Pope really did was to confirm each power in what it actually had and to allot "spheres of influence" in which they might pursue their discoveries without quarrelling—precisely as an international congress might do at the present day No more account was taken of the Caribs and Indians than is taken now of Africans, Philippinos, Chinese or Hawaiians Of course, they get the blessings of religion and civilization, but those also were promised in the Bulls and, in short, in view of recent movements towards a court of international arbitration, the whole proceeding has a modern air—there is as much fundamental justice in one case as in the other

Finally there is a fourth document (see appendix C) which we have lettered D. Mr Harrisse states that it is "known at present only in a ' Spanish translation made Aug 30, 1554, by one Gracian, doubtless ' Diego Gracian de Aldrete then secretary of Philip II for foreign "languages ' It is given in Navarrete as *Bula de la extension de la concesion y donacion apostolica de las Indias* There is, indeed, a Latin version in Solorzano, but Mr Harrisse is doubtless correct in supposing it to be a translation from the Spanish, necessary in a treatise written in Latin The most careful researches at Simancas, Seville and at Rome, have failed to find any trace of an original of the Bull Notwithstanding the frequency of forgeries of apostolical letters, said by Mr Harrisse to have existed in the time of Alexander VI, he thinks that there was a valid original Bull The letter cited by him does not bear on the point It was written by the Catholic sovereigns from Barcelona, Sept 5, to Columbus, then at Seville, preparing to start on his second voyage They wrote to ask his opinion on certain statements made and say that, if they are true, the Bull (of May 4) should be

amended But the Bull D bears date Sept 25, and twenty days is too short a time to cover the transmission of a letter twice over the extreme length of Spain and an application to Rome and the issue of a Bull based upon it Munoz, Herrera, Humboldt and other authorities of weight incidently notice this Bull without objecting to its authenticity, although they had only the Spanish translation and Mr Harrisse is well supported in his belief not only by their authority but by internal evidence for this Bull D is in effect nothing but such an interpretation or explication of the *Inter cetera* as would likely have resulted from the persistency of the extravagant claims of Portugal There is nothing in it to suggest occasion for forgery

Without raising the question of the existence of an original Bull, we venture to think that Mr Harrisse attaches to it a meaning which it will not bear . because if it had been intended to cancel any of the rights granted to Portugal in previous Bulls, that aspect would not have failed to come to the surface in the negotiations which resulted in the treaty of Tordesillas the following year, and, if Mr Harrisse's contention be right it would have won the case for Spain without argument at the Junta of Badajoz but although the proceedings have been preserved in great detail this Bull was not alluded to The Roman court could not, without cause assigned, revoke a decision in a secular matter made to a great Catholic power No injustice was in fact done or attempted to be done to Portugal, but Portugal was not allowed to strain the meaning of the grants made to her so as to appropriate the discoveries just made by Columbus for Spain These discoveries were supposed by all to be in the "Indies The West and East Indies had not then been separated in thought or name, nor was an intervening continent then supposed to exist The Portuguese claimed that their Bulls covered the Indies because their grant was 'ad Indos,' but they had not then reached India by sea, though they had turned the Cape of Good Hope The Spaniards had found some part, no one knew what, of the Indies, and the Bull maintained them in their possession In reading these old charters one must incessantly guard against the ambiguity of the word East, because the American continent being nonexistent in their thoughts, they constantly spoke of reaching the East on a westward course

This Bull D, now under review, is supposed to bear date Sept 25 1493 It commenced by saying that certain concessions had only a short time before been made to Spain referring to the Bulls B and C, and then it confirmed them in all their clauses as fully as if recited word by word—the line of demarcation, therefore was confirmed in the most absolute manner It stated that the grant had been made for

lands to the west and south and continued to the following effect (and here is the point of contention)—that since it may happen that in sailing to the west and south the Spanish sailors may discover land in eastern parts and lands which may belong to India, the Bulls of grant (B and C) are extended in all their clauses to cover such lands, whether they are or seem to be in the western, southern or eastern parts or in India. Then followed a *non obstantia* clause evidently aimed at the excessive claims of Portugal not revoking the Portuguese Bulls, but quashing the strained meaning put into them. The document then stated that, as by chance at some time or other, persons may have navigated these seas, nothing but actual and real previous possession was to avail in setting a bar to Spain in extending her discoveries on a western course. This principle of right by actual possession was adopted in the treaty of Tordesillas and the reader will find in appendix D Jaime Ferrer's opinion given to the Spanish monarchs that the Spanish demarcation might reach westwards round the world to the Arabian gulf, "*if our ships go there first*."

This view of the *Bula de la extension* is the one held by Navarrete. It is expressed as follows by Munoz, 'to remove every doubt with re-'gard to those countries of the Indies to which the King of Portugal 'might lay claim by virtue of former Bulls, the Holy Father declared "on the 26th of the following month of September, that all countries 'of the Eastern Indies which the Spaniards might find in case they 'were not already in Christian hands, should be included in the grant 'made to the Catholic sovereigns.' The principle laid down by the Pope was, as between the two powers, eminently just, for Portugal was claiming by virtue of her Bulls, lands which none of her sailors had ever seen. The Pope swept away these pretensions and made his grant to follow discovery and possession. He drew no line in the East, and therefore the papal partition of the world is, as will be shown more fully—a popular myth. The reader will find this *Bula de la extension* in appendix C. It is given in the Latin version of Solorzano *De Indiarum Jure*, Madrid, 1629.

V.—The First Line of Demarcation

It was the opinion of Columbus and certainly, in 1493, no other opinion upon the subject was of equal weight, that on sailing westwards across a meridian about one hundred leagues west of the Azores, he had entered the New World, and he recorded in his journal that at that point the needles of all his compasses had crossed over from easterly variation to one point west of north. We cannot, at this day, realize

the profound impression then made on the minds of that small company alone on an unknown ocean where no keel had ever before sailed when the compass, then sole hope for retracing their course, began, as they thought, to fail them Curiosity and wonder filled the mind of the admiral and consternation the hearts of the men at crossing the threshold of a mysterious region where hidden and unknown forces commenced to operate In a letter to the Catholic sovereigns, written in 1498 the admiral set forth his views as follows —

When I sailed from Spain to the Indies, I found that as soon as "I had passed a hundred leagues westward of the Azores there was a 'very great change in the sky and the stars in the temperature of the "air and in the water of the sea and I have been very diligent in observing these things I remarked that from north to south, in traversing these hundred leagues from the said islands the needle of the compass which hitherto had turned to the northeast, turned a full quarter 'of the wind to the northwest and this took place from the time we 'reached that line '

He then went on to describe the Sargasso sea and other remarkable appearances which, under the tension of his first voyage, made an indelible impression upon his mind Whether, in the light of our present knowledge, his views were correct or not is beside the question He held them to the last day of his life and we must take account of them

With this fixed opinion Columbus returned from his first voyage and driven by stress of weather into the Tagus he went, in response to an invitation he dared not disobey to visit the King of Portugal whom he found full of chagrin at the success of the expedition, as indeed he well might be for, as every one then thought the Indies, which in fifty years of continuous effort the Portuguese had not reached, by the south and east around Africa had been reached on a course almost directly to the west In that interview Columbus learned that the King intended to lay claim to the whole of the supposed Indies and adjacent seas in virtue of Bulls issued at various dates from 1443 to 1481 as well as under existing treaties between the two kingdoms This interview took place on March 10 The news went direct to Rome, then the centre of all intelligence, and reached there on April 11, before Columbus got to Barcelona to report in person to the Spanish sovereigns He arrived at Palos on March 15 and from thence he sent an express to their Majesties with the news He could not have failed to warn them of the claims made by the King of Portugal under the Papal Bulls nor could he have failed to suggest so obvious a precaution as that of obtaining, at the earliest moment, a decision of the Pope to confirm Spain in the possession of the newly discovered lands Con-

jecture amounts to certainty that Columbus indicated the line of one hundred leagues west of the Azores as a natural and equitable boundary. There was as pointed out by Humboldt, a reasonable motive "for seeking to convert a physical into a political boundary line." He believed that lines of variation ran parallel to the meridians, for on his return from his second voyage, when the pilots, by reason of severe storms had lost their reckoning, he thought in that way to ascertain his longitude. Mr. Harrisse is doubtless right in maintaining that Portugal had no share in fixing the line of one hundred leagues. Fernan Columbus said that his father had suggested the line and everything points that way. In the charter of privileges to the admiral the monarchs call it 'the line which we have caused to be traced.' The Spanish envoys were instructed to inform the Pope that the discoveries had been made without encroaching on the possessions confirmed to Portugal. In view of the existing treaty between the two crowns and the Bulls granted at the instance of Portugal the request of Spain was politic and reasonable and it was urged with promptness and vigour.

The line fixed by Alexander VI was therefore a scientific line, based upon the very first observation ever made of magnetic variation, and to cite Humboldt[10] again 'the Pope actually rendered without "knowing it an essential service to nautical astronomy and the physical "science of terrestrial magnetism. By directing attention to this new fact he gave a stimulus to continued investigation. He was therefore, abreast with the latest physical discovery of his day, and he was ahead of many who during the Cabot discussions of the last few years, have been tracing imaginary courses over the ocean while ignoring the prime factor of terrestrial magnetism.

Upon careful reading there does not appear to be any vagueness of language in the Bull. The Pope evidently distinguished between what he knew and what he did not know. He stated the distance westward in leagues—a measure of length absolute in itself and familiar to all mariners. He did not attempt to decide the circumference of the earth or to fix the length of a degree. He and his officials had too keen a sense of logic to regulate the length of a league, which was a known and certain quantity, by the speculative length of a degree which was an unknown and uncertain quantity. He did not, moreover, attempt to fix the latitude and longitude of the Azores or Cape Verde Islands. He was content to leave them wherever they might be and to measure westwards in a definite direction with a definite measure from a definite point—to wit, the most westward of either of the two groups of islands in the Atlantic then held by right of discovery as possessions of Portugal.

Nor was there any vagueness about the decision that the regions "westwards and southwards" of a line drawn from pole to pole should belong to Spain. Those words covered, and were meant to cover, a dangerous though unreasonable pretension of the King of Portugal made known to Columbus and made manifest in subsequent disputes—namely that everything south of Cape Bojador whether west or east, belonged to Portugal. The words "westwards and southwards" cut that notion clearly out. Moreover the line was not to pass a hundred leagues west of the Azores and Cape Verde Islands as if they were on the same meridian. The Pope did not decide that, nor did he know whether or not all the islands of those groups had been discovered. The line was to be one hundred leagues westward of any one of the islands whatsoever of those two groups. Both groups were held by the King of Portugal—a Christian prince, and a line one hundred leagues "*a qualibet insularum*" as Eden translates, "from any of the islands," would be reasonable and allow a wide margin. The distance being westwards would commence to be measured from the most western of either of the groups.

The main object of the Bull *Inter cetera* was to turn the enterprises of the two nations in opposite directions by giving each a free scope east and west of the specified line, for as has been shown, the Bulls to Portugal were not revoked but confirmed by the *Eximiae devotionis*. For if the Pope had revoked these Bulls he could not have referred to them as specifically setting forth the powers he was granting to Spain in the regions discovered by her sailors. The grants to Portugal extended *ad Indos*, and the grant to Spain was "*versus Indiam*"—the expeditions of the former power were to be made east and south, and of the latter west and south, one would reach India on the west side and the other on the east side. The Pope did not decide any line in the remote East, that was left to be settled by the principle that lands in the possession of any Christian prince were excepted from the scope of the Bull. That point did not become practical until Magellan's expedition reached the Philippine Islands and El Cano brought home the news. Meantime in 1493 Portugal was chiefly concerned to get more extended limits upon the Atlantic, because, for aught any one then knew, some great southern continent might exist, such as Pomponius Mela had indicated, and of that Portugal wanted to have as large a share as possible. The principle is the same as that of the line of the treaty of Tordesillas laid down in the following year (1494) which was in effect (see appendix D) that the Catholic monarchs might claim anything discovered in sailing to the East on a westward course even as far as Arabia—*if only the Spanish ships arrived there first*.

The foregoing is an attempt to read the Bull in the light of its own time. It was the last of its kind and marked the close of an era, for the great revolt against Rome was rapidly approaching and the storm was soon to break. The Bull bound Spain and Portugal, as regards each other for they were parties to such references. As to how far it might be held by canon law to bind other nations is not necessary here to inquire. Henry VII did not hesitate to send Cabot west of the line, and Francis I sent Verazzano, and England and France founded claims to parts of America upon their voyages, but however that may be, the treaty of Tordesillas in 1494 abrogated the line established by the Pope and laid down another and this last line, and not Pope Alexander's line is the one spoken of in the books as the 'line of demarcation,' it is not the papal line at all and although in A.D. 1506, it was confirmed by Pope Julius II, it had been drawn by Spain and Portugal as if they alone had any concern with the matter. It will be of interest to state here that there has been found in the secret archives of the Vatican a document entitled "De Canadia et Nova Francia," setting forth an elaborate argument that the Pope's decision did not apply to the discoveries of Verazzano, because the grant was limited by its express words to 'islands and mainlands,' '*per nuncios et capitaneos vestros inventas*' i.e. discovered by Spanish ships. The argument is ingenious but it is also sound and applies as well and with more force to the voyages of the Cabots. The Papal line of demarcation was a *terminus a quo*—no *terminus ad quem* was fixed. The fact of discovery was to fix the latter for the grant to Spain would travel eastwards with every discovery until her sailors came to lands in the possession of some Christian prince. There can be no doubt upon this point if the Bulls are carefully read—the westward progress of Spain was to be limited only by the eastward progress of Portugal. Mr. Harrisse is correct in writing of the "*alleged*' partition of the globe by Pope Alexander. The globe got divided somehow in the diplomacy between Spain and Portugal. It was a lay arrangement. The Pope drew a line on the Atlantic and gave the two nations a fair start, as it were back to back. As for the far East it was only the assumption of the disappointed kings of Portugal that the popes had granted to them unknown and undiscovered lands. The Bull awarded territories, when they were discovered in certain specified directions, upon the condition that when they were discovered they were also found unoccupied by any Christian prince.

VI.—The Treaty of Tordesillas in 1494

Up to the year 1491 the Portuguese had made no discoveries beyond the Cape of Good Hope. In seventy years of continued effort along the coast of Africa they had succeeded in reaching the turning point towards the east and south of Asia. It was not until 1497 that Vasco de Gama led the way to India by sea—up to 1494 all the discoveries had been southwards. Successive popes had upon solicitation, confirmed these discoveries and had also adjudged to Portugal the seas and lands discovered or to be discovered from Cape Bojador southward and eastward as far as the Indies, *"usque ad Indos"*. Spain had admitted these claims by treaty in 1479, and had bound herself to refrain from interference. Portugal, in the meantime, had sent agents overland to Arabia and India who had reported upon the wealth of these regions, and was preparing with confidence to open up the eastern trade when the return of Columbus from his first voyage dissipated her dreams of monopoly; for he was supposed to have touched the eastern shore of the long coveted land of spices. It was a bitter disappointment to the King and he at once laid claim to more than the Bulls or the treaty would warrant. Columbus in the interview at Valparaiso assured King John that he had strictly followed the orders of his sovereigns and had avoided the regions conceded to Portugal, and the same statement was made at Rome when Spain applied for a Bull of confirmation. It was made with truth, for, whatever theories a few scholars may have held, no one before Columbus seriously attempted to go to the Indies by the west, and all the Bulls as well as the treaty, had been drawn solely in contemplation of voyages by the south and east.

The objective point of both nations still lay open to further discoveries, though from opposite directions, for neither *"usque ad Indos"* or *"versus Indiam"* carried an inclusive grant of the coveted regions to either party. As Mr. Harrisse properly points out, the Pope had not concerned himself with the other side of the world in laying down his line of demarcation, but it was in fact, left to be decided by discovery. With commendable desire to avoid war the two nations entered into negotiation, and the first proposition of Portugal was that the line should run east and west along the parallel of latitude of the Canary Islands, and that the activities of Spain should be confined to the regions north of that line. This was to attribute to the word "southward" of the Portuguese Bulls an absolute meaning that it would not bear. An attempt was also made to strain the meaning of *"usque ad Indos,"* and make it cover the Indies whose eastern margin Columbus

was supposed to have touched It is especially to be observed here that if the supposed *Bula de la extension y donacion* of Sept 25, 1493, had possessed the meaning attributed to it by Mr Harrisse and others, it would have obviated discussion for the regions in dispute would have been conceded to Spain From the fact that no such Bull was alluded to in the tedious preliminary discussions, we may fairly argue that either there was no such Bull or that it had no meaning beyond that attributed to it in the previous chapter

Three envoys from each nation met at Tordesillas, and on June 7, 1494, signed the famous treaty which during three hundred years was a subject of dispute . first, in the East, with reference to the Moluccas, and then in the West with reference to the boundary between Brazil and the Spanish provinces in South America The result was that without mention of any Bulls a line of demarcation was fixed much further westwards But it was not 270 leagues farther west, as often stated. for the line of the Pope was a hundred leagues west of the Azores and the line of the treaty was 370 leagues west of the Cape Verde Islands, so that the six degrees of longitude between these two groups must be deducted from the apparent additional extension The treaty was confirmed twelve years later by Pope Julius II on January 24 1506. Then the treaty line was legally substituted for the line of Alexander VI though in fact no other line than the treaty line has been found on any map even on those made as early as 1501-2 It will therefore be seen that the division of the world into two parts was a development of the treaty of Tordesillas, and that this "arrogant presumption —the cause of so much indignant writing—is not properly laid to the charge of Pope Alexander

Much of the literature on this subject would lead the general reader to suppose that the Bulls of concession to Spain and Portugal were a mass of pretentious and contradictory documents issued from time to time on no settled plan On the contrary they will be found consistent with each other throughout the series and from the first to the last, the principle of a primary right by discovery is a key to their true interpretation They are sometimes diffuse as are the legal documents of other courts on account of the technicalities with which they are drawn It is misleading to associate with them the least notion of infallibility, as if they touched upon any question of faith or morals They were in fact decisions of a court of appeal Every one of them was issued upon a petition by one power or the other—there were only two nations then engaged in discovery—and the rights of both were considered with care The last of the series, that of Leo X, Nov 3, 1514, in reaffirming all the grants to Portugal, did not imply that these

rights had been abrogated. The change in the location of the line had been homologated by Julius II, and that remained as established by the treaty. It has remained, as appears in the first part of this paper to be cited in the Venezuelan argument, and Mr Bourne is in error in supposing that it was abrogated by the Bull of Leo X and the right by discovery substituted then. The right by discovery and occupation is an inheritance from the Roman civil law and existed all the while. It was the real law running under all the Bulls. The form of donation was transitory and superficial.

The line of the treaty was an arbitrary line, based on no attempt at a rational or scientific principle. It was a mere compromise and it is worthy of remark that Columbus, in the deed of entail made at Seville (Feb. 21, 1498), as well as in his last will, ignored the treaty and cited the line of the Bull in its own terms. There was a stipulation in the treaty that within ten months a joint expedition should measure off these leagues of western extension from the Cape Verde Islands to the dividing line, and if land were found the line was to be marked by a tower or pyramid. That expedition never sailed. The coast of America was soon recognized as a bar to the Eastern Indies and the Portuguese pressed on their discoveries and conquests to the farthest East, relieved from the apprehension of interference from Spain.

The return of El Cano, Magellan's lieutenant, in 1521, by way of the Cape of Good Hope, again awakened the Portuguese from their dreams of monopoly and showed them that their success in shifting the line westwards on the Atlantic was likely to lose them the Spice Islands (Moluccas) in the Pacific. How the idea of continuing the line round the globe first arose does not clearly appear. It was not in the Bull nor is it expressly in the treaty, but in the negotiations which arose immediately upon the return of El Cano, it was taken for granted by all as if it existed by necessary implication in both documents, while in fact no *terminus ad quem* can be found in either.

Collisions between the Spanish and Portuguese in the far East began to grow sharp and threatened to bring on war when a convention, known as the Junta of Badajoz, assembled at that city on April 11, 1524, to decide upon the partition of the world between the two powers, for no others were considered in the matter. Sebastian Cabot was there as an expert pilot for Spain. He could have told them, and perhaps did tell them, that the flag of England had been already planted on the coast of the western continent. If he did tell them of Baccallaos, no record remains of it. Fernan Columbus was there also, and El Cano and Stephen Gomez, and Nuno Garcia, and Diego Ribeiro

all as naval assessors for Spain. Portugal also sent pilots, amongst them some who had sailed in the East. It will be necessary to revert again to this convention, the point to be noticed here is that the pilots and sailors and astronomers were assessors to give professional information and that there were really two separate processes or inquiries. One related to the location of the line of demarcation, the other to the facts of prior possession or discovery. The Moluccas were the chief subject of dispute and while the Spaniards claimed that they had discovered them, without sailing over Portuguese waters, the Portuguese insisted that they had been there first. It is, therefore, evident that the doctrine of right by discovery was strongly held by both sides. The argumentation is very modern in its method. The Emperor insisted that, even if Portugal had discovered the islands (which he denied), that it would not give a title without possession taken, and that no one could truly say that he had found anything which he had not taken possession of. This is the precise statement of law in the British case against Venezuela (p. 150), 'that it is not the finding of a thing but the taking "by the finder that gives the title,' so that here we have the Emperor Charles V. anticipating Grotius by a hundred years and Bluntschli and the British foreign office by four hundred years, in a most important doctrine of international law, and the Emperor went on to appeal to the principles of "general law and natural reason." We may, therefore, see that the only new principle in this branch of international law is a definition of 'possession' in a stricter sense, made as late as 1888 at Berlin. The Badajoz Junta was without result. The Portuguese would do nothing but assert that the islands were theirs and call upon Spain to give them up first and then try to prove the contrary, while the Spaniards maintained that they had the islands by possession, but would give them up if Portugal would establish her right by an action under the stipulations of the treaty.

In 1680 disputes arose about the treaty line on the other side of the world—on the River Plate in South America—and another convention met, with no better result. The matter was settled in 1750 not by reason or law, but in consequence of a marriage between the two royal houses.

It remains now to observe that the only rational line drawn on the ocean was that drawn by Pope Alexander VI. and that his line was almost immediately superseded by another, decided upon by the only two nations seriously occupied at that period in making discoveries. The new line was drawn without reference to the Pope and although during the past four hundred years the papal line of demarcation has been the theme of much indignant writing, the Spaniards and Portuguese were

all that time disputing about another line—one of their own making Last of all when, in 1885, the present Pope arbitrated upon the dispute concerning the Caroline islands, situated near the western edge of the grant supposed to have been made by his predecessors, he made not the least reference to that, but decided consistently with his predecessors according to the underlying principle of law

VII —The Point of Departure

The commissioners at Tordesillas made no improvement on the Bull of Pope Alexander in point of clearness for their distance of three hundred and seventy leagues was made to commence from the Cape Verde Islands generally, and that group extends over three degrees of longitude These islands are distant about 320 miles from Cape Verde in Africa They are barren and when discovered by the Portuguese in A D 1456, were uninhabited They were of considerable importance while the Portuguese were extending their discoveries southwards along the coast of Africa and, in the old narratives of voyages, they are often mentioned

At first, while the islands of the West Indies were supposed to be outlying portions of the East Indian archipelago and still more after A D 1500, when Cabral discovered Brazil, the Portuguese claimed the most western island of the group, San Antonio, as the initial point for the western measurement In that way the western limit of their demarcation area was made to include a greater stretch of the continent now known as South America The Spaniards were not so certain about it, however, and in A D 1495, the Spanish sovereigns consulted Don Jaime Ferrer on the meaning of the treaty and he gave his opinion that Fogo (the central island, should be the point of departure His opinion is still extant in full, and may be found in Navarrete Vol II A translation is appended (Appendix D) and is worth careful perusal, The question submitted was chiefly in regard to some practical method of measuring the 370 leagues upon the Atlantic ocean, but incidentally, it becomes clear that Ferrer, in 1495 had no idea that the Pope, or anybody else, had made a partition of the world, for he says that the eastern lands 'on the Arabian Gulf side will belong to the sovereigns, "our masters, should they vessels first navigate there" This single sentence demonstrates beyond cavil that Pope Alexander had not attempted to divide the world, and that the doctrine of right by discovery was the prevailing doctrine of international law then, as now It also indicates that the development of the idea of a partition line in the far East had not, up to 1495, set in

Two years later, A D 1497, Vasco de Gama led the first Portuguese expedition to India and, following in his track a swarm of adventurous sailors and soldiers very quickly opened up all the eastern regions India China, Siam, Malacca, Java, Borneo Sumatra and the archipelago of islands were visited to an unknown extent, for the Portuguese were very reticent and made it a capital offence to communicate to foreigners a map of their discoveries in the East Still, the news of the wonderful riches of those lands spread over western Europe The ships returned with cargoes and successful captains made establishments, and successful sailors brought home marvellous tales From all this Spain was excluded for on the west, to the north and south, stretched the interminable barrier of America, and all search for an opening through it had been in vain. Secure in her monopoly Portugal was therefore anxious only to stretch her demarcation area westward over Brazil

Among the Portuguese adventurers who had returned from the farthest East was Ferdinand Magellan—the greatest sailor of those days In resentment for personal affronts he renounced his allegiance and passed over to Spain His knowledge and experience led a Spanish expedition through the strait, which still bears his name, and across the great South Sea to the coveted Spice Islands in the East In 1521, one of his captains, Sebastian El Cano, returned by way of the Cape of Good Hope The world had been circumnavigated—the farthest East had been reached by sailing on a western course, and for the second time, the Portuguese hope of a monopoly of eastern trade was shattered

We have seen in our enlightened age the United States on the brink of war with Great Britain because they supposed the latter held against a Spanish power an inconceivably minute and valueless portion of one half of what was in dispute in 1521 But Spain and Portugal did not go to war in 1521, although their people were kindred in speech They resorted to negotiation instead It is very remarkable that there was no blustering Perhaps it was the absence of newspapers—perhaps it was the want of free representative institutions, it is sufficient to say that the convention, called the Junta of Badajoz, met in 1524, as explained in previous pages, and endeavoured to settle the question

The Portuguese then saw their error in shifting westward the Pope's line of demarcation, for the principle of prolonging the line of Tordesillas round the globe had become established and the further west the line was placed upon the Atlantic, the greater would be the extent of territory in the far East to be brought within the Spanish

sphere of influence The Portuguese envoys shifted their ground at Badajoz and claimed the most eastern islands of the Cape Verde group as the proper point of departure, hoping thus to gain the Spice Islands in the East They took their stand upon the stipulation that the expedition, contemplated in the treaty of Tordesillas, was to assemble at the Canaries, and from thence, proceed to the Cape Verde Islands to commence the westward measurement The islands they argued, being mentioned in the plural, were to be taken as a group, and Sal and Bonavista (written Boavista) the most eastern islands were the most important We have, in British America, an interest in two islands of this group for two localities on the east coast of Newfoundland—Togo and Bonavista—were from the earliest days named after them But without stopping to discuss that fact we find the Portuguese envoys, in 1524 insisting on Bonavista being the proper point of western departure The Portuguese contention was by no means well founded, because these two eastern islands are the smallest of the group and do not contain four per cent of the population The Spanish envoys contended for San Antonio—the most western point—and although their main motive was to bring the Spice Islands within their line, they had the better argument, for San Antonio is the second in size and in population The Portuguese protracted the negotiations and, as they thought to gain more by delay, they made difficulties until the conference separated without arriving at a decision As a matter of fact, ascertained many years later when accurate estimation of longitude could be made, the Spice Islands and Philippines did fall within the Spanish demarcation One hundred years later a dispute arose about territory on the Rio de la Plata, and the two nations again exchanged bases, for Portugal argued for San Antonio and Spain for Bonavista It may therefore be safely concluded that Pope Alexander VI and the Roman Curia were better geographers and international lawyers than the political envoys, either at Tordesillas or Badajoz

VIII.—Ancient and Mediæval Measures of Length[17]

At first sight nothing could appear more easy than to determine the line of demarcation fixed by the treaty of Tordesillas A locality from whence to start, a definite direction in which to sail, and a definite distance to be attained were all specified, apparently, plainly enough, nevertheless it has been the subject of interminable disputes and recently in the Venezuelan dispute when the question was supposed to have become academic, it once more came to the surface of practical political debate

To the statesmen of the sixteenth century the ownership of the Moluccas and the western limit of Brazil depended upon the solution of this question. To sailors and scholars it involved the great riddle of the age, "the secret of longitude," for on the unquiet ocean, these leagues of Tordesillas could not be measured, nor marked, save by astronomical methods requiring a knowledge of the length of a great circle of the earth and consequently of the length of a degree of the equator.

Now, so far as the absolute distance is concerned, to wit, the three hundred and seventy leagues of the treaty, the circumference of the earth had no more to do with it than the circumference of the moon. The difficulty was solely in the practical measurement of distances at sea which the necessity of the case required to be resolved into degrees of longitude. The only method then known was by dead reckoning, and the deceptive character of that mode is manifest in the simple fact that, at the convention of Badajoz in 1524, the maps shown differed by forty-six degrees. We now know, within a few miles, the circumference of the earth and all are agreed as to the length of a degree, but so hard is it to realize the difficulties of past ages that many writers, down to even recent periods, have transposed and applied to marine leagues, the uncertainties which really existed with regard to degrees only. This is confusing to the student, for all the old navigators reckoned in leagues and whether we are following the journals of Columbus, or Cartier, or Champlain, it is necessary, if we wish to be exact, to have clear notions concerning this general standard of sea distances. By unguarded language on this subject, Mr Harrisse is entangling our early history anew. For in his *Diplomatic History*, he writes of *leagues* of Enciso, *leagues* of Ferrer, *leagues* of Columbus, as if they differed in length, instead of writing of *degrees* of Enciso, of Ferrer, of Columbus, for, while the leagues were the same, the degrees differed in the number of leagues they contained, and when Mr Harrisse takes varying and erroneous quantities and makes them perform trigonometrical functions, the confusion is made worse, since the sine, cosine, tangent or square of an erroneous quantity acquires no value from being found in mathematical tables—rather the contrary, because to square a mistake is to raise it to a higher power of error.

It is beyond the scope of this paper to discuss the numerous national and provincial land leagues or miles. The inquiry will be confined to the marine league of Columbus and other sailors during the period of the great expansion of European nautical enterprise. For ready reference, it is convenient here to remind the reader that the circumference of the earth is now taken to be 21,600 nautical or geo-

graphical miles. In statute miles it is variously calculated from 24,874 to 25,020 miles, for, as the earth is not a perfect sphere, these measurements are only close approximations. For the same reason, the length of a degree on the equator is estimates at from 69.1 to 69.5 statute miles. In current speech the latter measure is sometimes given, though the former is more nearly correct.

All the countries of Western Europe which fell under the influence of Rome retained permanent traces of the itinerary measures of the Empire in the mile, or *mille passuum* of the Roman soldier. In the Latin countries the measure persisted, and even in England, nearly until the end of the reign of Elizabeth, the mile was 5000 feet or 1000 paces, and was only 146 feet longer than the Roman mile. In the eastern part of the Empire the Greek stadium was the standard and so continued until the Mohammedan invasion. The Roman geographers borrowed their science from the Greeks and used in their writings the Greek standard measure, and this continued to be the measure used by writers on cosmography throughout the middle ages, for after the time of Ptolemy no original work was done, save by the Arabians, until long after the period now under review. The stade is continually cited in the literature of the age of Columbus and it is a very convenient measure for it bore an accepted and simple ratio to the mile and league of those days. Ptolemy was the chief authority, but the works of Aristotle, Eratosthenes, Strabo and other Greeks as well as the Roman writers Pliny, Macrobius and Pomponius Mela, were continually referred to with deference. It is difficult to realize the persistent weight of the authority of Ptolemy. Not until 1569 did Gerard Mercator lead the way in revolt and all traces of the great error of Ptolemy, as to the length of the Mediterranean Sea, did not disappear from the maps until the beginning of the last century. For 1500 years Ptolemy reigned supreme and, therefore, it is not lost labour to study the Greek geographers, if we wish to understand the age of Columbus.

The true circumference of the earth was not known to the Greeks, and they made different estimates, from Aristotle 400,000 stades, to Ptolemy, 180,000 stades. The estimated length of a degree of the equator varied in proportion, from $1111\frac{1}{9}$ to 500 stades respectively. In Appendix E, I have given a comparative table of the length of the equator and of a degree thereof as held by the chief geographical writers, from Aristotle down to the date of the convention at Badajoz. The figures are given in Greek stades and Italian leagues and miles. In a separate column is the translation of these figures into nautical miles of the present day. The compilation has been made in order to assist the student in grasping quickly the value of these ancient measures.

Putting aside Aristotle and Archimedes they fall into three schools—those who follow Eratosthenes and reckon 700, those who follow Ptolemy and reckon 500 stades to a degree, and those who follow the Arabian measurements. The true length of a degree is 600 stades, so that one school erred by one hundred stades in excess and another by 100 stades in defect. Lelewel states very confidently that Pytheas of Marseilles estimated the degree at 600 stades, thus making the circumference of the earth 216,000 stades, the precise equivalent of our 21,600 nautical miles. This, if true, would be exceedingly interesting, but after examining Lelewel's authorities, I have not ventured to include Pytheas in the table.

The science of the Greeks loomed very large to the eyes of the cosmographers of the fourteenth and fifteenth centuries, and they entertained the opinion that the Greeks knew the true circumference of the earth and that if the great geographers of antiquity differed in the number of stades at which they estimated it, the difference was caused by their use of stades of various lengths. There was nothing in the Greek writings to suggest any such opinion. The Greek authors used the word "stades" without any qualification and without any apparent fear of being misunderstood, plainly intending in all their arguments the Olympic stade of 600 Greek feet, which was the length of the foot-race course at the Olympic games. In the third century of our era, after the work of the geographers was over, there did come into use, in Egypt and in the Asiatic provinces of Rome, a stade of which seven and a half went to the Roman mile. This stade, called the Phileterian stade, affected the measures of the Arabs and its influence appeared in the writings of Alfragan and passed thence into the works of Bacon and D'Ailly and, through them, into the speculations of Columbus.

The idea of different stades having been used by the Greek cosmographers is first met with, says Humboldt, in a memoir by Jaime Ferrer to the Spanish sovereigns relative to the line of demarcation. This is an exceedingly interesting document and, as it throws strong light upon the nautical science of the period in review, a translation is given at Appendix D. Ferrer said that the 252,000 stades of Eratosthenes, the 180,000 of Ptolemy and the measurements of Strabo, Alfragan and Macrobius were the same in sum, but that the stades of Ptolemy were larger. (See App. D.) Ptolemy, at that time was an authority not to be gainsaid and yet Ferrer held, with Eratosthenes, that in a degree of a great circle, there were 700 stades of eight to a Roman mile. This heroic method of reconciling the ancient authors gained ground in an uncritical age and was advocated later by Delisle, Freret, Gosselin and many others, down to the early years of the present

century Under the influence of this perennial fountain of error the subject became an arena of confusion Without wearying the reader by going over this maze of unsettled opinion it will be sufficient to refer to the pages of Lelewel for although, in his work on Pytheas, he distinguishes only two kinds of stades, the Olympic of eight to a mile and the Italic of eight and one third to a mile, in his larger work there are bewildering dissertations on the different stades and miles of ancient authors We read of very small stades 10 or 12½ to a mile of Phileterian stades 7½ to a mile which later became 7 to a mile, of stades 5 to a mile of Posidonian stades 500 to a degree, of stades of latitude, and of stades 502 ½ to a degree Then we may read of miles of longitude, of Venetian miles 60 to a degree of miles 80 and 85 to a degree In one map he finds seven different valuations of miles—50 55 67 83. 86 and 90 to a degree, and he naively remarks that this inequality of miles to a degree is common to nearly all the maps of the middle ages Thus the absurdity is plainly apparent of taking these maps as seriously as if they had been compiled by scientific survey, and of making measures in common and daily use, such as the stade and the mile shift and vary proportionately to the errors on the early maps and to suit the speculative notions of men groping during 2000 years to discover the true circumference of the earth and the corresponding length of a degree of longitude These "fancy stades" as D Avezac called them are "will o' the wisp" lights to beguile the student of historical geography

The researches of Colonel Leake cleared away this fog and his views were supported by Uckert Muller, St Martin and later writers so that it may be now be considered as established that the stade of the Greek writers was equivalent to 600 Greek feet equal to 606 75 English feet From this arises a convenient and very nearly accurate ratio for converting, at sight the Greek stades into our own familiar nautical miles as follows —

1 Olympic stade = 606 75 English feet
10 " " = 6067 5 " "

and

1 nautical mile = 6075 5 " "
1 admiralty knot = 6086 5 " "

or by Clarke's measurement = 6087 11 " "

Therefore 10 Olympic stades = 1 minute of the equator,
and 600 " " = 1 degree " "

The Greek and modern standards then though not absolutely equivalent are sufficiently so for all practical purposes The difference between ten Greek stadia and our accepted nautical mile is not greater than that between the nautical mile of customary computation and the

admiralty knot and, as before stated, the precise circumference of the earth has not even yet been ascertained with absolute accuracy.

Although the Greek itinerary standard was the stadium, or foot-race course at Olympia, it was repeated in the stadia of all other Greek cities in Europe or Asia Minor erected for the athletic games of which the Greeks were so fond; and in fact, wherever Greek influence extended the stade continued to be the established standard.

The Roman standard itinerary measure was characteristic of the world-conquerors. The mile is the *mille passuum*—the thousand paces—of the legionary soldiers; and as they subdued Western Europe the Roman power was consolidated by a perfect system of roads, and their milestones recorded the distances and familiarized the people for many centuries with a general standard of length which overrode the local measures of the shifting and semi-barbarous tribes of the West. The integer of this standard is the *passus*—the pace, not the *gradus* or step—a distinction sometimes overlooked because, as the word passed through the French into the English language it became synonymous with step, whereas the Roman *passus* was a double step equal to five Roman feet. In the British army the step is two and a half feet and the *passus* is five feet, but the Roman soldier had a slightly shorter step and his thousand paces were equivalent to only 4 854 English feet. I am not forgetting that, along the Rhine, there existed in the army, in the later years of the Empire, a longer foot—the Drusian foot—equal to 13·1 English inches, but the standard in law and the measure along the roads was the Roman mile related to the Roman foot of 11·65 English inches. The following is a short table of these standards:

1 Roman mile	= 1000 passus	= 4854 English feet
1 Old English mile	= 1000 paces	= 5000 " "
1 modern statute mile		= 5280 " "
75 Roman miles (75·09)		= 1 degree

It is instructive to observe that even the old English mile is based upon the idea of a thousand paces. 'Our ancestors," as Professor De Morgan remarked, "if they had not the old Roman mile thought they had it." The difference was only 146 feet, for the Roman foot being 11·65 English inches, 63 Roman are equivalent to 61 English feet. Capt. John Davis of Arctic fame, one of the most skilful sailors of Queen Elizabeth's reign, gives in his *Seaman's Secrets* (a treatise on navigation published in 1595) the following table:—10 inches = 1 foot, 5 feet = 1 pace, 1000 paces = 1 mile, 3 miles = 1 league, 20 leagues = 1 degree. The editor of *Davis's Works* in the *Hakluyt Series* adds a note to say that this must be misprint as a mile is 5,280 feet; but it is no misprint but an accurate statement of measures then in common use.

The expression *statute mile* suggests the existence of an older customary mile but, while the shorter measures are often mentioned in the statutes of the early parliaments, they make no references to miles nor do they define a mile in any way. Our *statute mile* first made its appearance in 35 Eliz. cap. vi. a statute making certain regulations concerning building houses within three miles of London. Incidentally to its object and, as if some necessity existed for the definition, the mile intended is said to consist of eight furlongs. The mile of 5000 feet contains only 7½ furlongs, 3 perches and 2 palms, but the new mile is divisible into 8 furlongs, into 320 perches, poles or rods, and into 1760 yards which native English measures, while they form convenient divisors of the statute mile of 5280 feet, cannot be harmonized with the Roman mile of 5000 feet.

If, then, the Roman mile persisted in England down to the last year of the reign of Elizabeth with only the slight modification above noted, there is little cause for wonder that it should have persisted in its integrity in the countries round the Mediterranean where the Romance languages are spoken and these were the countries wherein the great navigators were born and from which issued the expeditions of early discovery to the East and West Indies. Cabot and Verazzano were Italians, in the service of England and France respectively, and their voyages were the foundations of the claims of these nations in North America. The earliest literature of marine adventure is in Spanish, Portuguese, Italian and Latin, and the integer of distance is throughout, the Roman mile known as the Italian mile and its multiple the Italian league—the marine league of the Mediterranean.

The student of the early narratives meets continually with the league as a measure common to all. Whether it be Columbus, Vespucci, Magellan, Cabot, Diaz, De Gama, Galvano, Cartier, Ramusio or Oviedo, it is always the marine league in which their distances are calculated and Hakluyt in his translations carried them over without explanation, qualification or change. Sometimes we meet with miles, but they are the Italian or Roman miles. I am leaving out of the question the Swiss, Danish and German miles and leagues, because these nations took no part in early discovery and did not fall under the Roman power but among the great maritime nations of Europe during the period under review, the marine league was a standard as universal as was the stade in Greek civilization and Greek geography.

The word league (Low Latin leuca and leuga) is Celtic and signifies a stone, in some Celtic tongues a flat stone, and was probably a road mark. It was a measure used in Celtic Gaul in the time of Ammianus Marcellinus and seems to have been originally 1500 *passus* in length

It was in use in early times, by the sailors of the Mediterranean, as a sea measure exactly equivalent to four Roman or Italian miles. The writers of the period of expansion had, therefore, no need to qualify or translate their nautical distances, for they were understood by all, at the simple ratio of eight stades to a mile and four miles to a league. Notions concerning "fancy stades" and "fancy leagues" are anachronistic stumbling blocks in the way of a student. The early writers did indeed speculate much as to how many leagues went to a degree, but not as to the length of a stade, a mile or a league. These latter were their standards, in which they were trying to work out the length of a great circle of the earth and of its three hundred and sixtieth part, to wit,—a degree. They were the known elements— the *a* and *b* of the problem, the length of a degree was the *x* and *y*—the unknown quantity. The league was an absolute measure—any man might pace it off on any road—the degree depended upon the circumference of the earth, and it is evident that the 370 leagues of the treaty of Tordesillas would extend to a far greater western longitude on the shrunken globe of Columbus than on the expanded globe of Jaime Ferrer's imagination.

As "fancy stades" of 1111 $^1/_9$, 833 $^1/_3$, 700 and 500 to a degree were invented by geographers from Don Jaime Ferrer down to recent times, in order to harmonize the theories of Aristotle, Archimedes, Eratosthenes and Ptolemy as to the earth's circumference, so, these being exploded, similar illusions sprang up concerning leagues and even in the present day, are befogging the nautical history of the fifteenth and sixteenth centuries. None of the old authors or navigators suspect they are dealing with a variable measure. The Pope and the treaty-makers, as well as the seamen, give their distances, their sailing directions, in leagues—just only leagues—without a qualifying adjective. In late works, however, we read of leagues 14 $^1/_6$, 15, 16 $^1/_2$, 16 $^2/_3$, 17 $^1/_2$ and 21 $^5/_8$ to a degree. "Merveilleux procédé" writes D'Avezac, "qui, pour assurer l'exactitude du mesurage, créa la mesure même d'après l'objet "bien ou mal mesuré."

It is in this respect that Mr. Harrisse's *Diplomatic History* will be apt to mislead the unwary reader and the danger is the greater because of the mathematical top-dressing which gives a semblance of solidity to what is really a quicksand of hypotheses. Thus we read—(p. 92)

"Ferrer's above stated data result in four different lengths for his "league, viz, 21 353, 21 813, 21 625 and 21 875 to the degree of the "equator of his sphere. For reasons given in our notes we select from "among these four valuations 21 875 to his equatorial degree upon which "to base our calculations." Mr. Harrisse selected the right valuation according to Eratosthenes, but, not according to Ferrer, for a reference

to Ferrer's statement (Appendix D) will show that he (Ferrer) did not give a valuation of 21 875 (21 $^{7}/_{8}$) but a valuation of 21 625 (21 $^{5}/_{8}$) leagues for his equinoctial degree Ferrer's arithmetic was wrong according to his datum, and his other measurements are also wrong. The only one which concerns this inquiry is that on the latitude of the Cape Verde Islands, which he states to be 15°, and he gives the corresponding length of a degree on that parallel as 20 $^{5}/_{8}$ leagues, whereas a correct calculation from the data of Eratosthenes (which he gives correctly enough) would make it 21 $^{1}/_{8}$ (21 129) leagues These are not four valuations of the *league*, but four valuations of the *degree* It will be seen from the table (Appendix E) that Ferrer, in following Eratosthenes, made the globe one-sixth larger than it is, and in his statement (App D, para 10) it will also be seen that he knew very little about the ancient cosmographers for he enumerates among his learned men "Ambrosi, Macrobi, Teodosi" as three distinct persons, whereas they are one, to wit Aurelius Theodosius Macrobius and, above all he was wrong in assuming the 500 stades of Ptolemy and the 700 stades of Eratosthenes to express a degree of the same absolute length—to be in short identical concrete quantities Of what value are the sines or tangents of such quantities as these? Or what mathematical results can be based upon the statements of an authority who did not reason correctly, even from his own erroneous data?

Again with regard to Enciso, we read (at p 105) that "in Enciso's 'sphere, the value of the equatorial degree was 16 666 leagues,' and lower down "Enciso's equatorial degree contained 18 0498 of his "leagues and (at p 192) the windrose in Enciso's *Suma*, "seems to "have been calculated on the basis of 17 $^{1}/_{2}$ leagues" Mr Harrisse in this case thinks that "logic requires' him to select 16 $^{2}/_{3}$ leagues as the proper quantity That is open to question, but here again, what value can such data as these have upon which to base a mathematical argument?

It would be wrong, however, to suppose that Mr Harrisse thinks he is dealing with real leagues It is the inaccuracy of writing 'leagues" of Enciso or Ferrer etc, when he means "degrees" which is misleading In a note at p 193 he says "The probability is that the league, which "is always a unit usual and fixed was the same for Enciso and Ferrer, 'that is at the rate of 32 stades for one league This throws an additional vagueness over the matter It is like saying that it is *probable* that the three angles of a triangle are equal to two right angles, and then going on to argue impartially, by trigonometrical methods, on both hypotheses—that they are and that they are not thus equal The effect is confusing and tends to reopen the theories of "fancy leagues" which

were exploded by D'Avezac forty years ago in his discussion with Varnhagen.

The utter inapplicability of mathematical reasoning in questions such as these is further shown at p. 190, where Mr. Harrisse sets forth his mode of measuring the Cantino map and after submitting it to mathematical methods, he concludes "that no reliance is to be placed 'on the metrology of that map." Again, at p. 210, the Ribeiro map is put through a similar trigonometrical course and the conclusion is "that no reliance is to be placed scientifically speaking on the carto-'graphical statements of the period." The wonder is that the attempt was ever made, but now that Mr. Harrisse has given it up we may, at least, hope that lesser authorities will cease their anachronistic efforts to scale off these crude and tentative maps of the old navigators as if they were admiralty charts or publications of the U. S. Geodetic Survey.

The *Suma de Geographia* of Fernandez de Enciso was published at Seville in 1519 and does, indeed, give the circumference of the earth as 6000 leagues. It was an estimation in round numbers, for it was equivalent to 21,000 Italian miles and is found not only in Enciso but in some other authorities. That divided by 360 gives $16\frac{2}{3}$ leagues to a degree or 16,666 as Mr. Harrisse states (p. 105). The reason therefore of Mr. Harrisse's statement that "Enciso's equatorial degree con-'tained 18,0489 of his leagues" is not apparent and a careful perusal of the intricate calculations from pp. 193 to 197, in which Ferrer's leagues, and Enciso's leagues and our marine leagues, are mingled with Greek stades and French metres fails to make it clear. The mixing up of absolute quantities such as leagues with shifting and unknown quantities such as degrees is fatal to clear reasoning. No doubt the league both of Enciso and of Ferrer consists of 32 stades, but Ferrer counted $21\frac{7}{18}$ and Enciso $16\frac{2}{3}$ of them to a degree. The quantities are irreconcilable and cannot be combined to form a third league. It is certain that neither Enciso or any one else had a league of 18,0498 to a degree for there is not only his own statement as given above, but his calculation of the distance between the port of Higueras and the island of San Thome which he gives at 117 degrees and equivalent to 1950 leagues, and if one be divided into the other the quotient is again $16\frac{2}{3}$ leagues to a degree. The distances, at that time were inconceivably erroneous but the fact of this distance being over-estimated does not affect the ratio between the two quantities given.

Returning to the *Suma* of Enciso it must be observed that, when it was written, a more correct estimate of the length of a degree was very generally accepted and to this Enciso bears most decided testimony in

that part of his book which may be called scientific, for it is in connection with a windrose and contains practical instructions for navigation, to the effect that in sailing on a direct northern course until the pole star is elevated one degree, 'that degree is equal to seventeen leagues and a half and that is the distance you will have gone" There is no uncertainty about that statement, but Varnhagen and other advocates of 'fancy leagues,' in order to get leagues to suit their theories, started an idea that latitudinal and longitudinal degrees on a great circle of the earth were of different length Enciso disposes of that idea His sailing directions continue thus "Also, if your course is one point the "distance sailed will be 17 $^3|_4$ leagues and departure 3 $^1|_2$ leagues for the 'degree If your course be two points, count the distance sailed 19 $^1|_6$

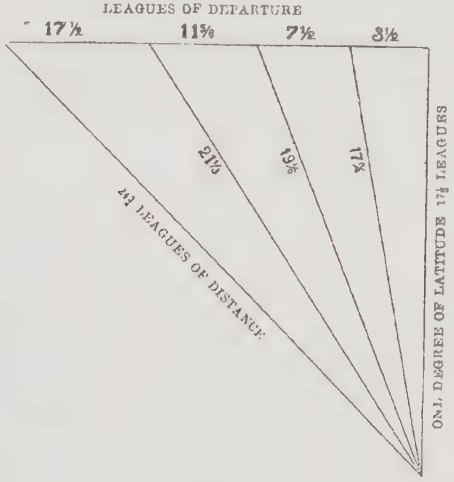

FIGURE 1

'' leagues and departure 7 $^1|_2$ leagues If three points count the distance sailed as 21 $^1|_3$ leagues and the departure 11 $^1|_6$ leagues If the course 'be four points count the distance as 24 $^3|_4$ leagues and the departure '17 $^1|_2$ leagues'' The above diagram (Fig 1) will show the meaning graphically

Reference to a Traverse Table, in any work on navigation, will show these figures to be correct For comparison the statement in tabular form is as follows —

One degree of Latitude 17½ leagues, by Enciso's windrose is equal	Leagues		
	Latitude One Degree	Longitude or Departure	Distance Sailed
North by West Course 1 point W	17½	3½	17¾
North-northwest, Course 2 points W	17½	7½	19¼
Northwest by North, Course 3 points W	17½	11⅝	21⅓
Northwest, Course 4 points W	17½	17½	24¾

Enciso's *Suma* is a rare book There are four editions of it, A.D 1519 1530, 1530, 1546, all of which are in the Lenox Library and through the courtesy of the librarian, Mr Wilberforce Eames, I am able to give the following tracing of the upper half of the windrose (Fig 2)

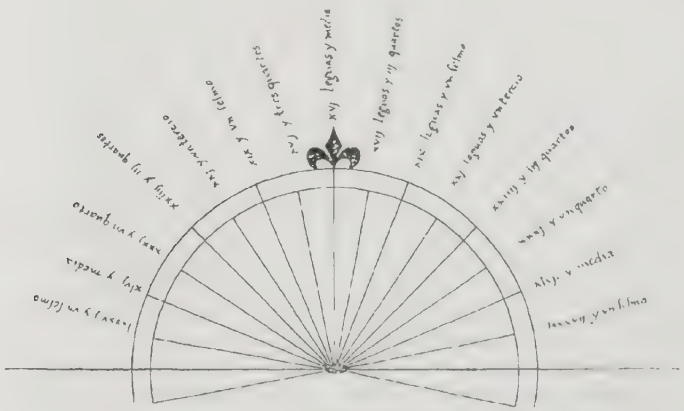

FIGURE 2

Close inspection will show a misprint over the north point A stroke is dropped and it reads XVI instead of XVII, but it is clearly a misprint for the text underneath gives the distance at length *deziziete leguas e media* seventeen leagues and a half The error is corrected in the later editions It is apparent by Fig 1, for the course of four points

is 15° and the triangle is right angled For the preceding reasons it is evident that Jeneso knew that the true length of a degree was $17\frac{1}{2}$ leagues, although the rate of $16\frac{2}{3}$ leagues was still held by many when he wrote It will, I trust, be noted that all these sailors and cosmographers knew that the world was a sphere and in speculating upon the length of degrees of latitude and longitude they meant, as we do degrees upon great circles unless they mention some specific latitude they are measuring upon

I come now to inquire why the round number of 6000 leagues, or 24,000 Roman miles, should have been accepted as the measure of the circumference of the earth, and I find the answer in a letter of Amerigo Vespucci to Medici as follows "The reason why I count $16\frac{2}{3}$ 'leagues to a degree is that according to Ptolemy and Alfragan the "world is 24,000 miles in circumference which is equal to 6000 "leagues which divided by 360 is equal to $16\frac{2}{3}$ leagues, a result which I have many times tested by the point of pilots and have found it 'sound and true" The reason is, therefore to be traced back to Ptolemy, though by way of Alfragan, and it must be observed therefore, that it is a Greek, not an Arabian measurement

It has been stated already that when the Arabs overran the Eastern Roman Empire, they found in use a stade (Egyptian, royal, or Phileterian) of which $7\frac{1}{2}$ went to a Roman mile They did not know that this measure did not arise until after Ptolemy's time and they divided the 500 stades of Ptolemy's degree by $7\frac{1}{2}$, and thus made it $66\frac{2}{3}$ Roman miles which, in leagues of four to a mile was equal to $16\frac{2}{3}$ leagues, and this leads to a consideration of the effect the Arabian learning had on the cosmological ideas of the period now in review

During the long ages of confusion in the West, while wave after wave of barbarians submerged the Roman civilization and the lamp of learning burned only in the seclusion of the cloister, the Arabians cultivated the arts and sciences at the chief centres of their power—Bagdad, Cairo and Cordova The works of Aristotle, Archimedes, and Ptolemy, among other authors, were translated into Arabic for the great school of geography and astronomy founded at Bagdad, and about A D 833, the Caliph Almamoun ordered several measurements to be made of an arc of the meridian, the only attempt at a really scientific solution of the problem from the time of the Greeks until the beginning of the eighteenth century Greek science first reached Western Europe through Arabic translations The works of Massaudy and other Arabian geographers, passed into Spain through the Moors, and the *Celestial Movements* of Alfragan were translated into Latin and became well known to the learned The measurements under Almamoun had

resulted in an estimation of 56 2/3 miles to a degree and were accepted as true by Friar Bacon and Cardinal D'Ailly and others of the favourite authors of Columbus, who, dividing that figure by four, arrived at the conclusion he adhered to all his life that the length of a degree was 14 1/6 leagues, and he even asserted that he had verified it on one of his voyages to Guinea. It has not been absolutely proved that these Arabian miles were equivalent to Roman miles, but the inquiry is long and it is sufficient now to say that they were taken to be equivalent, and in the belief that the earth was much smaller than it is, the admiral discovered America and thought it was India. In that way arose the belief, to which the admiral and his son adhered, in a degree of 14 1/6 leagues.

The different estimations of the length of a degree at the close of the fifteenth century can nearly all be traced back to some manipulation of Ptolemy's figures. If his 500 stades be divided by eight—the true divisor—we have another estimate often met with, viz., 62 1/2 miles to a degree or 15 3/8 leagues. This again, in current writing was rounded off to 60 miles and 15 leagues and given out also as Ptolemy's measurement. Jaime Ferrer alone followed Eratosthenes and valued the degree at 700 stades and, dividing by eight, he made it 87 1/2 miles; this divided again by four made 21 7/8 leagues in reality, though by some error it is 21 3/4 in his opinion (App. D), but even he could not throw off the influence of Ptolemy and as pointed out already was driven to suppose that Ptolemy's 500 stades were longer and were equivalent to the 700 of Eratosthenes. There was in fact no settled estimate and we find in the opinion of Duran, Cabot and Vespucci, at Badajoz, that they quote Ptolemy for a length of 62 1/2 miles while themselves valuing a degree at 70 miles.

It is an anachronism to expect, in the writers of pre-scientific days, that precision of statement demanded by modern science and the reader must be prepared to meet with occasional passages which conflict with the general trend of the authorities. It is certain that Gomara held to the valuation of 17 1/2 leagues, but he also quotes Ptolemy loosely, for he says (in Eden's translation) "He (Ptolemy) assigned likewise to "every degree three score miles which make seventeen Spanish leagues "and a half." Here are two manifest slips, because Ptolemy's degree was 62 1/2 miles and 17 1/2 leagues were 70 miles. This last valuation is beyond question, for Fernan Columbus, in his official opinion at Badajoz, says expressly that "Castillian or marine leagues" are four miles in length. Again in a passage in the *Fifth Decade* of Peter Martyr we find that author complaining that sailors counted the 175 leagues, from Borneo to Malacca as ten degrees, whereas "the ancient

"philosophers reckoned 15 leagues or 60 miles to a degree" This passage shows how loosely Ptolemy was quoted, and also that the belief in 17 ½ leagues to a degree had then been established at sea

That which had been hidden from the learned throughout the ages, was revealed to the practical mariner unskilled in book lore, but skilled to watch the elevation or sinking of the pole-star on a northern or southern course, and skilled also to estimate the dead reckoning of his little vessel by the aid of his sand glass Therefore, when the length of voyages extended over thousands of miles, the elaborate measurements of the Greeks and Arabians were found to be wrong and the valuation of 17 ½ leagues or 70 miles was accepted by sailors in advance of scholars It was not far out of the way since 70 Italian miles are equal to 64 3 English statute miles and 69 1 of these last miles are now reckoned to be the length of a degree of a great circle

We may then conclude, with Navarrete and D'Avezac, that, at least as early as A D 1517, the valuation of 17 ½ leagues had come into general use Humboldt unhesitatingly quotes the leagues of Tordesillas at that rate Herrera would seem to know of no other, for at the very outset of his *History*, he gives the circumference of the earth as 6 300 leagues Magellan writing in A D 1519, to King Ferdinand, stated that the island of San Antonio is 22° east of the line of demarcation He gave the latitude at 17°, proving that he was reckoning at the rate of 17 ½ leagues to an equatorial degree At the convention of Badajoz in A D 1524, Ruy de Villegas stated that he had measured a degree with that result and Thomas Duran, Sebastian Cabot and Juan Vespucci, not only concurred in that valuation, but added that it was the usual estimate of Spanish and Portuguese sailors While this was the opinion of the Spanish pilots and experts, the Spanish judges clung to the 62 ½ miles of Ptolemy, because they thought that the Portuguese were stretching out the distance to 70 miles for the purpose of including the Spice Islands within their line

In A D 1529 at the treaty of Saragossa, the ratio of 17 ½ leagues was admitted on both sides for the Spaniards had recognized the fact that, as each party had 180 degrees, the length of a degree made no difference It had to count on both sides, and in after years, whenever the treaty came up for discussion the same ratio was made the basis of argument It persists all through the nautical authorities, not only in Spain, but in France for we find that Champlain, in A D 1632, when giving instructions for making charts, laid down the rule that the scale must be 17 ½ leagues to a degree

The reader will see, from these remarks, that the old writers deal with only one league that which was a multiple of the Roman mile

The doubt was solely as to the number of these leagues in a degree To write of leagues of Enciso, of Ferrer, or of anybody else, is to introduce uncertainty and error into the early history of this continent It is most important to build up our history on a solid basis and to follow the tracks of the early voyagers along our shores with some degree of certainty If then the argument of this chapter be followed and accepted the reader of the old narratives will have to do with only one league—the marine league used by Spanish, Portuguese, Italian and French sailors not only at the time under review but for an indefinitely long period before and an indefinitely long time after In the following table I give its equivalent value in English measures and, in order to show the limit of variation between the different authorities I give also the value as taken by Captain Fox (on the authority of Rear Admiral Rogers of the U S Naval Observatory) for his calculations upon the landfall of Columbus There is a difference of twelve feet in the mile This will serve to show the close approximation of all the estimations made, and to explain the slight variations among them

1 Roman or Italian mile = 1 618 yards = 4,854 feet English
4 " " miles = 6,472 " = 19,416 " "
or, according to Captain Fox,
1 Roman or Italian mile = 1,614 yards = 4,842 " "
4 " " miles = 6 456 " = 19, 368 " "
3 miles = 1 marine league of the early navigators

The reader is again referred to Appendix E for a detailed table of the different views held concerning the subject of this chapter These opinions are ranged in descending order, from Aristotle with a degree of 111 11 to Columbus with a degree of 45 33 of our modern nautical miles The figures are given in Greek stades, Italian miles, and nautical miles The equivalents in our nautical miles are printed for convenient reference in black faced type in the central columns

IX — The Lines of Demarcation on the Ocean

It has been shown that the line of demarcation, about which so much has been written during the past four hundred years—and so eloquently—is not the line of Pope Alexander It is the line of the Spanish and Portuguese plenipotentiaries at Tordesillas, in A D 1494 the following year They selected as their *terminus a quo* a group of islands—the Cape Verde Islands—extending over three degrees of longitude, without indicating which one they proposed to measure from and, in after years in consequence, some measured from Bonavista, the eastern island, some from Fogo, the centre island, and some from San

Antonio, the western island according to the shifting political necessities which from time to time arose For reasons stated on a previous page, the western island must be considered to be the legal point of departure, and it—San Antonio—is in 17° 12′ of north latitude and 25° 5′ 7″ of west longitude

Upon reflection, it will appear that there are only two inquiries concerning the location of the line of demarcation which can yield any result of historical interest First, where does this line fall under present conditions of nautical science? and second, where was it supposed to fall by the Spaniards and Portuguese governments, under the conditions existing at the time of the treaty, or as near as possible to it? This latter problem may be solved by the aid of maps, but not by weaving a tissue of hypotheses out of Jaime Ferrer's errors or by performing mathematical processes on globes of imaginary dimensions If the distances had been stated in degrees the case would be different, but the Pope and the plenipotentiaries avoided degrees and laid down the distance in leagues The degree is a relative term of length having no intrinsic value but depending on the circle of which it is the three hundred and sixtieth part It is the same on a library globe as on the globe of the earth—the league is a definite concrete quantity independent of globes or circles The terrestrial globe of Ferrer was 252,000 stades in circumference. Enciso had two sizes in his *Suma*, one (which Mr Harrisse adopts) of 192,000 stades, and another which he gave out to practical sailors of 201,600 stades, Columbus imagined a globe of 163,200 stades only, and to that he clung all his life It is manifest that 370 leagues measured upon four globes so different in magnitude would extend over greatly different numbers of degrees, and when all these varying quantities are combined with others as problematical and turned round in a mathematical kaleidoscope, the effect is bewildering

Returning to the first question, I would repeat that the real latitude of the island of San Antonio is 17° 12′ north, and would add that, on that parallel, degrees of longitude are 57 32 of our nautical miles in length It has been shown, on previous pages, that four Roman or old Italian miles, of 1618 English yards each, were reckoned to a league, and therefore, the 370 leagues of Tordesillas multiplied by four were 1480 Italian miles As the English nautical mile contains 2029 English yards, the following sum in simple arithmetic will tell us what these leagues are in our familiar measure:—

yds	yds.	Ital miles	Eng naut miles
2029	1618	1480	1180 2

The 370 leagues are, therefore, equivalent to 1180 of our marine miles, omitting the fraction

It has been stated that on the parallel of San Antonio a degree of longitude is 57 32 nautical miles We have, therefore, to divide one quantity by the other, thus—

$$1180\,2 - 57\,32 = 20° 35',$$

and the equivalent in longitude is therefore 20° 35′. To find this point on our charts the longitude west from Greenwich of the starting point must be added and the longitude of San Antonio is 25° 5′ and

$$25° 5' + 20° 35' = 45° 40' \text{ west longitude},$$

so that if we draw a line on an admiralty chart at the meridian of 45° 40′ it will be the true line of the treaty of Tordesillas, and we shall find that the line of demarcation, if calculated on true data, would never have touched any point on the continent of North America Cape Race is its most eastern point and is in longitude 53° 4′ W So the true line of Tordesillas passes 7° 24′ seaward of it and cuts the coast of Greenland in Davis' Strait The Dominion of Canada is thus shut up in the Spanish demarcation and only the neglected John Cabot, over whose unknown tomb memory has raised no trophies, has saved us from the full force of the primary count in the Venezuelan argument

Coming now to the second point of our inquiry, it must be admitted that, to all intents and purposes, this line of Tordesillas did at the period under review, cut our coasts, since both the Spaniards and Portuguese thought it did and governed themselves accordingly As explained before, the present paper is not concerned with South America but the map in front of Mr Harrisse's *History* contains the results of his calculations on the "spheres" of Ribeiro, Ferrer, Enciso, Oviedo, Cantino and the Badajoz experts, transferred to our admiralty charts, and they show lines of west longitude from 42° 30′ to 49° 25′, so that in any of these worlds the line would have passed seawards by nearly four degrees, of Cape Race, but, what is more remarkable, the unexpected result appears that Jaime Ferrer with a world of 252,000 stades, and Enciso with a world of 201,600 stades, should have come out to within one mile of each other as mathematically calculated by Mr Harrisse It is also worthy of remark that the present writer, working upon the world as now known of 216,000 stades in circumference, by simple arithmetic and with modern data, should have arrived within three miles of the same conclusion Stated in Italian miles the lines are as follows, in the present paper with a degree of 75 miles at 45° 40′, Enciso in Mr Harrisse's map with a degree of 66·66 miles at 45° 38′, and Ferrer on the same map with a degree of 87 5 miles at 45° 37′. This is a very surprising result of mathematical reasoning It means in effect that whether 370 leagues (equal to 1480 Italian miles) are divided by 75, 87 5 or 66 6, the quotient is the same within a limit of only 3 minutes of longitude

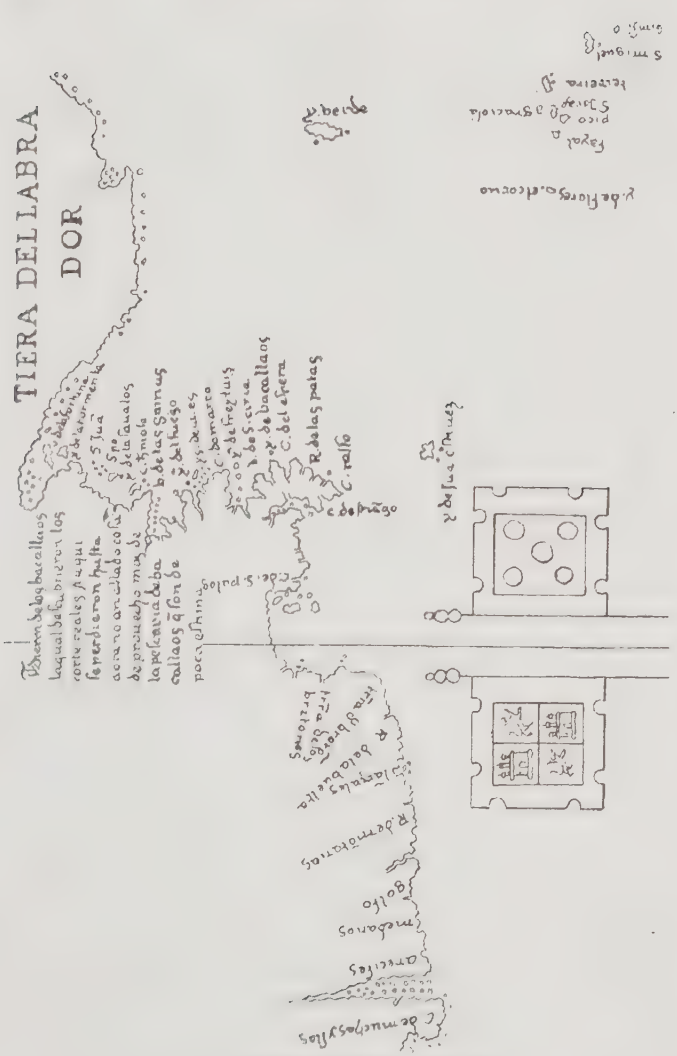

Fig. 3. Ribeiro, Spanish, A. D. 1527.

The second point of our inquiry, namely, where upon our coast did those old navigators think that the line touched? cannot be found mathematically, for it would seem from these calculations on "spheres" that the same result is reached from widely different data That method is plainly inapplicable It is necessary, therefore, to turn to the maps of the period—those maps which, mathematically measured, will mislead the student, but which will yield valuable information to whoever will read them in the light of their own age The topographical features upon them will show within a very small distance the place where the line of Tordesillas touched our coast—in the current opinion of the period when the people were alive who had the practical settlement of it

The Spanish view is set forth in two maps, both copied from the official map of Spain One is by Diego Ribeiro and is dated A D 1529, the other is dated A D 1527, and has been ascribed to Fernan Columbus, but Mr Harrisse thinks it to be the work of Nuno Garcia de Toreno Mr Harrisse has the greater probability on his side, but it makes little difference, since both Ribeiro and Garcia were celebrated pilots and were among the experts on behalf of Spain at the Badajoz conference Both of them were distinguished chart makers and Ribeiro was one of the commissioners for compiling and supervising the standard map—(Padron Real) Fig 3 is an extract from the well known map at Weimar made by him The two flags are on the South American coast

FIG 4 NUNO GARCIA, SPANISH, A. D. 1527

and have been moved up and included in this extract to show how the line is marked on the map—the Portuguese to the east and the Spanish to the west of the dividing line between them. The reader's attention is called to the fact that the line cuts the coast far west of Cape Race [illegible] the south coast of Newfoundland. It passes west of nearly the whole region of Baccallaos and just clears [illegible] may be taken as Nova Scotia and the point of Cape Breton. It corresponds as nearly as possible to the meridian of 60° W. on our charts which passes through Cabot Strait close to the island of St. Paul.

Fig. 4 is an outline extract of the map by Nuno Garcia, or Fernan Columbus. It is traced from Winsor's *Narr. and Crit. History*, Vol. II. p. 43. In this map the opening between Cape Breton and Newfoundland is indicated, as it is also on earlier maps, and the line of demarcation passes through it. These two maps are conclusive evidence that, on the Spanish official map, the division was close to the point of Cape Breton and cut off all Newfoundland into the Portuguese demarcation. That then was the Spanish view of the question, and it is important to remember that the true longitude of the line has been shown to be 45° 40′. The longitude, therefore, on both these maps is 11° 20′ out of the truth; so far as that part of the coast is concerned.

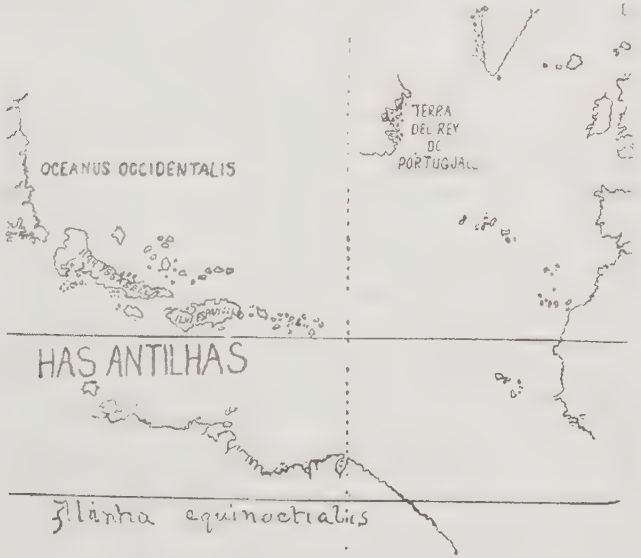

FIG. 5. CANTINO MAP, PORTUGUESE, A. D. 1502.

Turning now to the other side, there will be found only two maps of undoubted Portuguese origin in which the line is shown The first in order of date is the Cantino map of A D 1502, which has been beautifully reproduced in Mr Harrisse's work on the *Corte Reales* Fig 5 is an outline tracing of a portion of this map The coast of America at that early date is not continuous and much distorted, but it is plainly manifest that the dotted line on the sketch, representing the dividing line, passes far west of Cape Race and cuts off all of Newfoundland to the east This map, therefore, concurs with the Spanish maps above cited The longitude of this map is, therefore, just as erroneous (and no more so) as that of the Spanish maps, and it will also be observed that every one of the Antilles is north of the tropic of Cancer whereas in reality, every one of them lies to the south of it The latitude, therefore, of that part of the map is from eight to ten degrees out of the truth

Fig 6 is the second Portuguese map referred to above It is anonymous and undated, but all authorities agree in assigning it to A D 1514-1520 The extract given is taken from Kohl and in it we have the most indubitable corroboration of the indications upon the three maps previously cited The line is seen to cut off Baccalaos to the east It just grazes the point of Nova Scotia and passes to the north at the precise point where Cabot Strait opens up in the rear of Newfoundland

Here, then, we have a most striking record of concurrence, between the Spanish and Portuguese authorities, as to where, in their opinion, the line of Tordesillas cut our coast. We are not called upon to perform elaborate mathematical calculations upon imaginary worlds of different sizes and everyone of them wrong nor to measure distances in leagues of various lengths or in degrees of different great circles, containing from 56 to 87 miles each The opinion current at the time which was the subject of our second question, is set forth graphically beyond possibility of doubt As I have urged in previous papers, Cape Race is the cardinal point of the geography of the northeast coast of America, and always has been The very same name has clung to it since A D 1502, and, in all the four cartographical witnesses above cited, the line passes at an approximately similar distance west of it If then the question be asked, where the line of Tordesillas really was? I would reply, at 15° 40' W on our maps, but if the question be—where did the Spaniards and Portuguese suppose it to be? I should answer—close to the west of the meridian of 60° on our maps

I have called attention to the fact that these old maps are very erroneous as to longitude, and sometimes as to latitude also How

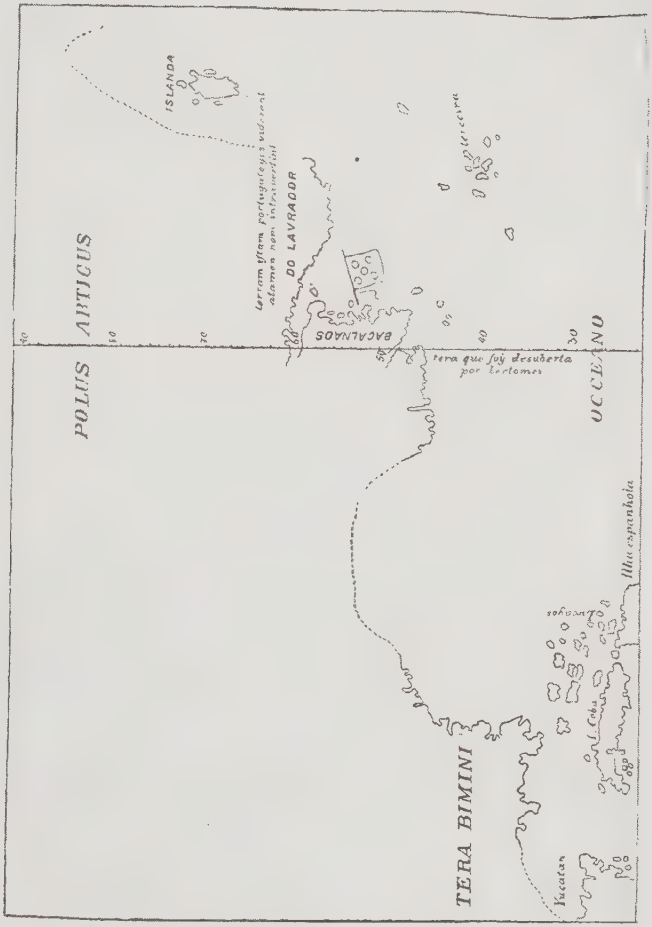

FIG. 6. PORTUGUESE MAP, A. D. 1514-20.

could they possibly be correct when the old navigators had no means of correcting their dead reckoning? Hence it was that, in measuring their course south and east to the Moluccas round the Cape of Good Hope and over the Indian Ocean, their estimations of longitude differed by as much as forty-six degrees. If, as has been stated above, the Mediterranean Sea, which washed their feet from childhood, was always laid down twenty degrees too long, ought it to be cause for wonder if, across the unquiet western ocean, their longitude was fifteen degrees in error?

Elsewhere, I have endeavoured to point out the injustice to the memory of Sebastian Cabot in calling him false and venal for changing his service, as did so many of the great sailors of those days without blame. The concurrence of the line of partition on these maps clears the memory of that most daring of sailors, Corte Reale, from the charge of "wantonly" inscribing Newfoundland on his maps "as within the "dominions of Portugal." He did not make the Cantino map, and, if that map was based on his information, the information is confirmed by the Spanish maps twenty-five years later. Nor can it be said that the Spanish cartographers were misled by him, for their maps were based on the reports of Estevan Gomez, who spent ten months along the east coast of America in A.D. 1525.

There are also very weighty historical reasons which confirm the above conclusion as to the point of contact between the two spheres of influence. When John Cabot was preparing to sail to the west, King Ferdinand, in a letter to De Puebla (March 28, 1496), objected to the expedition as being in prejudice to "our rights or those of the King of "Portugal." Afterwards, in A.D. 1511, the King's orders to Juan de Agramonte, relative to Cabot, manifest a doubt as to which side of the line the discovery was on. He was ordered to take Breton pilots, thus clearly indicating the locality to be in the "Bay of the Bretons," in the region marked on the Portuguese chart Fig. 6, as 'the land discovered by the Bretons;" and he is to make a settlement there, *without infringing on the rights of Portugal*. This last condition confirms the maps that the point of contact was in the King's opinion near the spot of Cabot's discovery as laid down subsequently in Sebastian Cabot's map of 1541.

Again, in A.D. 1541, when Spanish spies reported the preparations for Roberval's proposed settlement, the Spanish ambassador at Lisbon endeavoured to incite the King of Portugal to send an expedition to destroy these French interlopers. The King replied that he knew where the French were going and that it was in his territory, but he declined to take action because they could do him no harm there and

he thought, moreover, the expedition would fail The ambassador then addressed himself to the queen, who was devoted to the interests of the Emperor Charles V, and even suggested that, if the King would not defend his territories, they should be ceded to the Emperor who would take care of them This expedition was to sail through Cabot Strait and make a settlement within it

The grant of the King of Portugal in 1521 to Joam Alvarez Fagundez was for the territory "from the line of demarcation on the "south to the boundaries of the land discovered by Corte Reale on the "north," and, if the map of Lazaro Luis of A.D 1563 is to be accepted as evidence of a grant forty years before it would seem that a part of the peninsula of Nova Scotia was considered to be within the Portuguese line

We may, therefore, feel sure, both on cartographical and historical grounds, that although the line of demarcation, according to the light of the astronomical science of the present day, would pass away out to sea seven degrees westward of this continent, yet as between Spain and Portugal, it was acknowledged to cut the coast of Nova Scotia and that Portugal by right of prior occupation might have held the territory of Baccallaos as against Spain By right of discovery England's claim was prior to all, for John Cabot touched the main continent in 1497 The point where he touched is indicated by the instructions of Ferdinand to Juan de Agramonte above cited It was close to the line of demarcation and, on the map of Sebastian Cabot of 1544, it was at Cape Breton This last point has been sufficiently elucidated by the present writer in previous papers in these *Transactions* It only remains to observe that converging lines of inquiry concentrate the interest of geographical historians upon that point of the northeast coast of Nova Scotia Those who seek for mathematical demonstration in history will lose their labour The subject matter admits of probable proof alone Even if the probability should amount to moral certainty, its intrinsic nature will be the same An erroneous quantity propounded to a calculating machine can produce nothing but an erroneous result and hypotheses worked out by mathematical tables acquire no higher probability on that account The tendency is in the reverse direction

NOTES

1 Maine—Ancient Law, p. 101

2 Cicero—de Legibus, Bk. II, chap. 4

3 Bryce—Holy Roman Empire, p. 244

4 Maine—Ancient Law, p. 249

5 St. Augustine—de Civitate Dei, xvi., 5

6 Harrisse—Diplomatic History, p. 76

7 Lingard—History of England, vol. 2, p. 178

8 Harrisse—Diplomatic History, p. 17

9 Andié—Manuel de Droit Canon, *ad verb.*

10 Harrisse—Diplomatic History, p. 18

11 Harrisse—Diplomatic History, p. 19

12 Harrisse—Diplomatic History, *ib.*

13 Harrisse—Diplomatic History, *ib.*

14 This *Campo di Fiori* is the place indicated at p. 51 *Diplomatic History* as "the Floral Field." It is an open space off the Piazza Navona where acts of public proclamation were made.

15 Humboldt—Examên Critique, III., p. 52 *note*

16 Humboldt—Cosmos, II., p. 657

17 It is impossible to make references to all the authorities from whence the conclusions of this chapter have been drawn. Many are cited in the text. Among those not so mentioned are Humboldt, *Cosmos* and *Examen Critique*, Bunbury Ancient Geography, Beasley, Dawn of Modern Geography, Smith, Dictionary of Greek and Roman Antiquities and other works of the same class, Bulletin de la Société de Géographie, articles by D'Avezac and Varnhagen.

APPENDIX A

THE BULL OF DEMARCATION (C) OF MAY 4, 1493 (INTER CETERA), COLLATED WITH THE SUPPRESSED DRAFT (A) OF MAY 3

The following is a copy of the Bull as found in the *Fonti Italiani*, Part III of the series of volumes issued by the *Reale Commissione Colombiana*, Rome, 1894 Those words which were not in the unpromulgated Bull and were inserted to bring it to its final form, as published, are printed in italics The words in the draft which were omitted in the final Bull are printed in the footnotes with references to their original places in the text

ALEXANDER episcopus, servus servorum Dei, carissimo in Christo filio Ferdinando regi et carissimæ in Christo filiæ Helisabeth reginæ Castellæ, Legionis Aragonum *Siciliæ* et Granatæ illustribus, salutem et apostolicam benedictionem Inter cetera divinæ majestati beneplacita opera et cordis nostri desiderabilia illud profecto potissimum existit, ut fides catholica et christiana religio nostris præsertim temporibus exaltetur ac ubilibet amplietur et dilatetur, animarumque salus procuretur, ac barbaræ nationes deprimantur et ad fidem *ipsam*[1] reducantur Unde cum ad hanc sacram Petri Sedem, divina favente clementia, meritis licet imparibus, evocati fuerimus, cognoscentes vos tanquam veros catholicos reges et principes, quales semper fuisse novimus et a vobis præclare gesta toti pene jam orbi notissima demonstrant, ne dum id exoptare, sed omni conatu, studio et diligentia, nullis laboribus, nullis impensis nullisque parcendo periculis, etiam proprium sanguinem effundendo, efficere, ac omnem animum vestrum omnesque conatus ad hoc jam dudum dedicasse, quemadmodum recuperatio regni Granatæ a tyrannide Saracenorum hodiernis temporibus per vos cum tanta divini nominis gloria facta, testatur , digne ducimur non immerito et debemus illa vobis *etiam* sponte et favorabiliter concedere, per quæ hujusmodi sanctum et laudabile ac immortali Deo Acceptum propositum in dies ferventiori animo, ad ipsius Dei honorem et imperii christiani propagationem prosequi valeatis Sane accepimus quod vos, qui dudum animo proposueratis aliquas insulas et terras *firmas* remotas et incognitas ac per alios hactenus non repertas quærere et invenire, ut illarum incolas et habitatores ad colendum Redemptorem nostrum et fidem catholicam profitendam reduceretis, hactenus in expugnatione et recuperatione ipsius regni Granatæ plurimum occupati, hujusmodi sanctum et laudabile propositum vestrum ad optatum finem perducere nequivistis[2] Sed tandem, sicut Domino placuit, regno prædicto recuperato volentes desiderium adimplere vestrum, dilectum filium Christoforum Colon, *virum utique dignum et plurimum commendandum ac tanto negotio aptum*, cum navigiis et hominibus ad similia instructis non sine maximis laboribus et periculis ac expensis destinastis, ut terras *firmas et insulas* remotas et incognitas hujusmodi per mare, ubi hactenus navigatum non fuerat, diligenter inquirerent Qui tandem, divino auxilio, facta extrema diligentia,[2] in mari Oceano navigantes, certas insulas remotissimas et etiam terras firmas, quæ per alios hactenus repertæ non fuerant, invenerunt, in quibus quamplurimæ gentes pacifice viventes et, ut asseritur, nudi incedentes, nec carnibus vescentes, inhabitant , et, ut præfati nuntii vestri possunt opinari, gentes ipsæ in insulis et terris prædictis habitantes credunt unum Deum creatorem in cœlis esse, ac ad fidem catholicam amplexandum et bonis moribus im-

[1] Insert Christianam

[2] Insert, per partes occidentales ut dicitur, versus Indos

buendum satis apti videntur, spesque habetur quod, si erudirentur, nomen salvatoris domini nostri Yhesu Christi in terris et insulis prædictis facile induceretur Ac præfatus Christoforus in una ex principalibus insulis prædictis jam unam turrim satis munitam, in qua certos Christianos, qui secum iverant, in custodiam, et ut alias insulas et terras *firmas* remotas et incognitas inquirerent, posuit, construi et edificari fecit[a], in quibus quidem insulis et terris jam repertis aurum, aromatha et aliæ quam plurimæ res pretiosæ diversi generis et diversæ qualitatis reperiuntur unde omnibus diligenter et præsertim fidei catholicæ exaltatione et dilatatione, prout decet catholicos reges et principes, consideratis, more progenitorum vestrorum claræ memoriæ regum, terras *firmas* et insulas prædictas illarumque incolas et habitatores vobis, divina favente clementia, subjicere et ad fidem catholicam reducere proposuistis Nos igitur hujusmodi vestrum *sanctum* et laudabile propositum plurimum in Domino commendantes, ac cupientes ut illud ad debitum finem perducatur, et ipsum nomen Salvatoris nostri in partibus illis inducatur, hortamur vos plurimum in Domino, et per sacri lavacri susceptionem, qua mandatis apostolicis obligati estis, et viscera misericordiæ domini nostri Yhesu Christi attente requirimus, ut cum expeditionem hujusmodi omnino prosequi et assumere prona mente orthodoxæ fidei zelo intendatis, populos in hujusmodi insulis *et terris* degentes ad christianam *religionem*[b] suscipiendam inducere velitis et debeatis, nec pericula, nec labores ullo unquam tempore vos deterreant, firma spe fiduciaque conceptis quod Deus omnipotens conatus vestros feliciter prosequetur Et ut tanti negotii provintiam, apostolicæ gratiæ largitate *donati*,[c] liberius et audatius assumatis, motu proprio, non ad vestram vel alterius pro vobis super hoc nobis oblatæ petitionis instantiam, sed de nostra mera liberalitate et ex certa scientia ac de apostolicæ potestatis plenitudine, *omnes*[d] *insulas et terras firmas inventas et inveniendas, detectas et detegendas, versus occidentem et meridiem, fabricando et constituendo unam lineam a polo arctico, scilicet septemtrione, ad polum antarticum, scilicet meridiem, sive terræ firmæ et insulæ inventæ et inveniendæ sint versus Indiam aut versus aliam quamcumque partem quæ linea distet a qualibet insularum quæ vulgariter nuncupantur de los Azores et Cabo-verde centum leucis versus occidentem et meridiem, ita quod omnes insulæ et terræ firmæ repertæ et reperiendæ, detectæ et detegendæ, a prefata linea versus occidentem et meridiem per aliquem regem aut principem christianum non fuerint actualiter possessæ usque ad diem nativitatis domini nostri Yhesu Christi proxime præteritum, a quo incipit annus presens MCCCCLXXXX octavus, quando fuerint per nuntios et capitaneos vestros inventæ aliquæ prædictarum insularum,* auctoritate omnipotentis Dei nobis in beato Petro concessa ac vicariatus Yhesu Christi qua fungimur in terris, cum omnibus illarum dominis[e] civitatibus, castris, locis et villis, juribusque et jurisdictionibus ac pertinentiis universis, vobis hæredibusque et successoribus vestris, Castellæ et Legionis regibus, in perpetuum[f] tenore præsentium, donamus, concedimus, et assignamus, vosque et hæredes ac successores præfatos[g] illarum dominos cum plena[h] libera et omnimoda potestate, auctoritate et jurisdictione facimus, constituimus et deputamus, decernentes nihilominus per hujusmodi donationem, concessionem *et* assignationem[i] nostram nulli christiano principi, *qui actualiter præfatas insulas aut terras firmas possederit usque ad prædictum diem nativitatis domini nostri Yhesu Christi*, jus quæsitum, sublatum intelligi posse aut auferri debere Et insuper mandamus vobis, in virtute sanctæ obedientiæ ut, sicut etiam pollicemini, et non dubitamus pro vestra maxima devotione et regia magnanimitate vos esse facturos, ad terras *firmas* et insulas prædictas viros probos et Deum timentes, doctos, peritos et expertos ad instruendum incolas et habitatores præfatos in fide catholica et in bonis moribus imbuen-

[a] Substitute, professionem (for religionem)
[b] Substitute, donatis (for donati)
[c] Substitute, et singulas terras et insulas prædictas sic incognitas et hactenus per nuncios vestros repertas et reperiendas in posterum quæ sub dominio actuali temporali aliquorum dominorum Christianorum constitutæ non sint
[d] Insert, eum
[e] Insert, auctoritate apostolica
[f] Insert, de illis investimus, illarumque
[g] Insert, et
[h] Insert, et investituram

dum, destinare debeatis, omnem debitam diligentiam in præmissis adhibentes, ac quibuscumque personis[1] cujuscumque dignitatis, *etiam imperialis et regalis*, status, gradus, ordinis vel conditionis, sub excommunicationis latæ sententiæ pœna, quam eo ipso, si contrafecerint, incurrant, districtius inhibemus, ne ad insulas et terras *primas inventas et inquirendas, detectas et detegendas, versus occidentem et meridiem, fabricando et constituendo lineam a polo arctico ad polum antarticum, sive terræ firmæ et insulæ inventæ et inveniendæ sint versus Indiam aut versus aliam quamcumque partem, quæ linea distet a qualibet insularum quæ vulgariter nuncupantur de los Azores et Cabo verde centum leucis versus occidentem et meridiem, ut præfertur*, pro mercibus habendis vel quavis alia de causa accedere præsumant absque vestra ac hæredum et successorum vestrorum prædictorum licentia speciali,[2] non obstantibus constitutionibus et ordinationibus apostolicis[3] ceterisque contrariis quibuscumque, in illo a quo imperia et dominationes ac bona cuncta procedunt, confidentes, quod diligente Domino actus vestros, si hujusmodi sanctum et laudabile *propositum*[4] prosequamini, brevi tempore, cum felicitate et gloria totius populi christiani, vestri labores et conatus exitum felicissimum consequentur. Verum, quia difficile foret præsentes litteras ad singula quæque loca in quibus expediens fuerit deferri, volumus, ac motu et scientia similibus decernimus, quod illarum transumptis, manu publici notarii inde rogati subscriptis et sigillo alicujus personæ in ecclesiastica dignitate constitutæ, seu curiæ ecclesiasticæ, munitis, ea prorsus fides in judicio et extra ac alias ubilibet adhibeatur, quæ præsentibus adhiberetur, si essent exhibitæ vel ostensæ. Nulli ergo omnino hominum liceat hanc paginam nostræ *commendationis*, hortationis, requisitionis, donationis, concessionis, assignationis,[5] constitutionis, deputationis, *decreti*, mandati, inhibitionis[6] *et* voluntatis,[7] infringere, vel ei ausu temerario contraire. Si quis autem hoc attentare præsumpserit, indignationem omnipotentis Dei ac beatorum Petri et Pauli apostolorum ejus se noverit incursurum.

Datum Romæ, apud sanctum Petrum, anno incarnationis dominicæ MCCCCLXXXXIII quarto nonas maii, pontificatus nostri anno primo.

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[1] Insert, etiam.
[2] Insert—Et quia etiam nonnulli Portugallie reges in partibus Africe. Guinicæ et Minerm aurj alias insulas similiter etiam ex concessione apostolica eis facta reperuntur se requisiverunt et per sedem apostolicam eis diversa privilegia gratiæ, libertates immunitates, exentiones et indulta concessa fuerunt. Nos, vobis ac hæredibus et subcessoribus vestris prædictis, ut insulas et terras per vos reperta et reperiendas hujusmodi omnibus et singulis gratiis privilegiis, exentionibus libertatibus facultatibus immunitatibus et indultis hujusmodi, eorum omnium tenores ac si de verbo ad verbum præsentibus inserirentur, haberi volumus pro sufficienter expressis et insertis, uti potiri et gaudere libere et pacifice possitis ac debeatis in omnibus et per omnia, perinde ac si vobis ac hæredibus et subcessoribus prædictis specialiter concessa fuissent motu auctoritate, sciantis et apostolice potestatis plenitudine similibus, de specialis dono gratiæ indulgemus illaque in omnibus et per omnia ad vos hæredes ac subcessores vestros prædictos extendimus pariter et ampliamus.
[4] Insert—Nec non omnibus illis, quæ in litteris desuper editis concessa sunt non obstare.
[5] Substitute negotium (for propositum).
[6] Insert investitura. fidei.
[7] Insert, indulti extensionis, ampliationis.
[8] Insert, et decreti.

TRANSLATION

Alexander, Bishop, Servant of the Servants of God, to his very dear son in Christ, Ferdinand, King; and to his very dear daughter in Christ, Isabella, Queen, illustrious, of Castile, Leon, Aragon, Sicily, Granada, health and apostolic benediction Among the works most acceptable to the Divine Majesty, and desirable to our hearts, that is certainly above all, that the Catholic faith, and the Christian religion, especially in our times, should be exalted and everywhere diffused and spread, and that the salvation of souls be sought after, and barbarous nations subjected, and brought over to the said faith Wherefore We, having been elevated, by the favour of divine clemency, although undeserving by our merits of so high a rank, to this sacred seat of Peter, acknowledging you, as true catholic Kings and Princes, whom we have always known as such and as your most illustrious actions now made known to all the world shew, not only that you are desirous of that, but that you likewise prosecute it with all vigour, earnestness, and diligence, sparing no fatigue, expense, or danger whatever, even to the shedding of your blood, and that it is long since you have dedicated all your mind and all your efforts to it, as the recovery of the kingdom of Granada from the tyranny of the Saracens, recently effected by you, with such evident proofs of divine favour, clearly shews, we deem it, therefore, worthy of us, and are bound to grant you even spontaneously and graciously, those things, by which you may be enabled more fervently to follow up this holy and praiseworthy resolution, and acceptable to the eternal God, to the honour of God, and for the propagation of the Christian empire And in truth it has come to our knowledge, that you, who had resolved in your minds, for some time past, to seek for and discover some remote and unknown islands and main-lands, and by no others hitherto found out, in order to induce the natives and inhabitants of them to worship our Redeemer and to profess the Catholic faith, but had not until now been able to conduct this holy and praiseworthy resolution to its wished-for end, finding yourselves fully engaged in the conquest and recovery of the said kingdom of Granada , but at length, as it pleased the Lord, having recovered the foresaid kingdom, and wishing to fulfil your desires, you despatched our beloved son Christopher Columbus, a man every way worthy and deserving of great praise, and capable of so great an affair, with vessels and men accustomed to such undertakings, with very great labour, danger and expense, in order that he might diligently seek out those main-lands and remote and unknown islands, in a sea where no person had navigated until now Who, at last, with the assistance of God, having used extreme diligence, in navigating through the ocean, discovered certain very remote islands, and also main-lands, that nobody had as yet found out, the inhabitants of which are numerous, live peacefully, and, as it is affirmed, go naked, and feed not upon flesh, and as far as your foresaid messengers can opine, the people who inhabit the foresaid islands and lands, believe that there is in heaven a God Creator , and appear well disposed to embrace the Catholic faith, and civilized manners, and there is a hope, that if they were instructed, the name of our Lord and Saviour Jesus Christ would be introduced into the said lands and islands And already the said Christopher has caused to be constructed and built in one of the principal of the foresaid islands, a very strong tower, in which he placed certain Christians, who went out with him, in order that they might have the care of it, and likewise discover other remote and unknown islands and continents In which islands and lands already discovered, are to be found, gold, spices, and a great many other precious things of divers kinds and qualities Whence, having diligently considered all these things, and especially the advancement and spreading of the Catholic faith, as it becomes Catholic Kings and Princes, you have resolved, in imitation of the Kings your ancestors of renowned memory, with the favour of the divine clemency, to subject and reduce to the Catholic faith the foresaid main-lands and islands, and the natives and

inhabitants of the same. We therefore, highly commending in the name of God your holy and laudable resolution, and wishing that it may be conducted to the desired end, and the name of our Saviour introduced into those parts, exhort you warmly in the Lord, and by the holy baptism you have received, by which you subjected yourselves to the apostolic commands, and by the bowels of the mercy of our Lord Jesus Christ, earnestly intreat you to proceed in taking up and prosecuting completely this expedition, the zeal for the orthodox faith continuing in you, you will and ought to induce the people, who inhabit the foresaid islands and continents, to embrace the Christian religion, nor let the dangers and fatigues of it ever deter you, possessing the firmest hope and confidence, that God omnipotent will happily accompany all your undertakings. And in order that you may undertake more freely and boldly the charge of so great an affair, given to you with the liberality of apostolic grace, We of our own motion, and not at your solicitation, nor upon petition presented to Us upon this subject by other persons in your name, but of our pure free will and certain knowledge, and with the plenitude of apostolic power, by the authority of God omnipotent granted to Us through blessed Peter, and of the vicarship of Jesus Christ, which we exercise upon earth, by the tenor of the presents give, concede, and assign for ever to you, and to the kings of Castile and Leon, your successors, all the islands and main-lands discovered and which may hereafter be discovered, towards the west and south, with all their dominions, cities, castles, places, and towns, and with all their rights, jurisdictions, and appurtenances, whether the lands and islands found or that shall be found, be situated towards India, or towards any other part whatsoever, and we make, constitute and depute you, and your foresaid heirs and successors, lords of them, with full, free and absolute power and authority and jurisdiction. drawing however and fixing a line from the arctic pole, viz from the north, to the antarctic pole, viz to the south, which line must be distant from any one of the islands whatsoever, vulgarly called the Azores, and Cape de Verd Islands, a hundred leagues towards the west and south, upon condition that no other Christian King or Prince has actual possession of any of the islands and main-lands found or that shall be found, discovered or that shall be discovered from the foresaid line towards the west and south, until the day of the nativity of our Lord Jesus Christ last past, from which the present year one thousand four hundred and ninety-three commences, when some of the foresaid islands were discovered by your messengers and captains decreeing nevertheless, that by this our donation, concession and assignation, it is not intended to take or deprive of the *jus quæsitum*, any other Christian Prince, who may have actually possessed the said islands and main-lands up to the aforementioned day of the nativity of our Lord Jesus Christ. And moreover, we command you, by the holy obedience which you owe us, that (as you promise, and we doubt not you will perform it, in consequence of your very great devotion, and royal magnanimity) you appoint to the said main-lands and islands upright men and fearing God, learned skilful and expert in instructing the foresaid natives and inhabitants in the Catholic faith, and in teaching them good morals, employing for that purpose all requisite diligence. And we most strictly forbid every person whatsoever, and of whatsoever dignity, (even imperial or royal,) state, degree, order, or condition they may be, under the penalty of excommunication *latæ sententiæ*, which they will incur by the very fact of transgression, to presume, either for trafficking, or for any other cause whatsoever, to approach, without special licence from you, and your foresaid heirs and successors, the islands and main-lands found, or that shall be found, discovered or that shall be discovered, towards the west and south, drawing and fixing a line from the arctic to the antarctic pole, whether the main-lands and islands found, or that shall be found, be towards India, or towards any other part, which line must be distant from any one of the islands whatsoever, which are vulgarly called the Azores, and Cape de Verd, a hundred leagues towards the west and south, as has been said notwithstanding the apostolic constitutions and ordinances, and all other things to the contrary whatsoever. We confide in Him, from whom empires,

dominions and all good things proceed, that the Lord directing your actions, if you prosecute this holy and praiseworthy resolution, in a short time, for the happiness and glory of the whole Christian world, your labours and your efforts will obtain a most happy accomplishment But, as it would be a difficult thing to present the present letters in each of the places where it might be requisite, we will and decree, of our own similar motion and knowledge that the copies of them, signed by a public notary, employed for that purpose, and provided with the seal of some person possessed of ecclesiastical dignity, or a member of the ecclesiastical court, be regarded as equally valid in all respects in courts of justice and without, and everywhere else as if the present letters were exhibited or shewn Let no person therefore presume to infringe, or with rash boldness to contravene this page of our commendation, exhortation, requisition, donation, concession, assignation, constitution, deputation, decree, mandate, inhibition, and will For if any person presumes to do so, be it known to him that he will incur the indignation of the Almighty God, and of the blessed apostles Peter and Paul Given in Rome, at St Peters, in the year of the incarnation of our Lord, one thousand four hundred and ninety-three, on the fourth day of May, in the first year of our Pontificate *Gratis* (The signatures follow)

APPENDIX B (BULL B)

The following is a copy of the Bull "*Fæmiæ devotionis*" taken from the "*Fonti Italiani*," Part III. By this Bull the Pope granted to Spain, over the territories discovered for the Spanish crown, the same rights which had by a series of Bulls extending over fifty years, been granted to Portugal over the territories to the south along the coast of Africa and to the eastwards "as far as the Indies." Such rights are conferred upon Spain *en bloc* without enumeration *quoad the territories discovered for Spain* and in doing this the rights of Portugal and the contents of the previous Bulls are of necessity confirmed, *quoad* the territories discovered for Portugal.

This Bull is to be found also in Solorzano, *De Indiarum Jure*, and in Rainaldi, *Annales Ecclesiastici*. It is not in Navarrete, nor is it often referred to in the books, though Herrera in one passage evidently has it in mind, and Barros refers to it. Mr Harrisse says it is not now to be found in the Spanish Archives. He has given (Diplomatic History) the only English translation which has hitherto appeared. His text was taken from Heywood's *Documenta Selecta*. He thinks Rainaldi gave this Bull a place before the Bull *Inter cætera* by mistake, but Rainaldi made no mistake. This Bull is dated May 3, and Rainaldi never knew of the suppressed *Inter cætera* draft of the same day. He gave the only *Inter cætera* he knew anything about, that dated May 4.

The reader is requested to compare the passages omitted from the draft Bull and given in the footnotes in appendix A with the passages printed in italics in this Bull. He will find that they are almost word for word the same, and all that remains in the Bull beyond this is merely the technical framework of formal verbiage always found in such documents.

ALEXANDER episcopus, servus servorum Dei, carissimo in Christo filio Ferdinando regi et carissimæ in Christo filiæ Helisabeth reginæ Castellæ, Legionis, Aragonum et Granatæ illustribus, salutem et apostolicam benedictionem.

Eximiæ devotionis sinceritas et integra fides, quibus nos et Romanam reveremini Ecclesiam, non indigne merentur ut illa vobis favorabiliter concedamus, per quæ sanctum et laudabile propositum vestrum et opus inceptum in quærendis terris et insulis remotis ac incognitis in dies melius et facilius ad honorem omnipotentis Dei, et imperii christiani propagationem, ac fidei catholicæ exaltationem prosequi valeatis. Hodie siquidem omnes et singulas terras firmas et insulas remotas et incognitas versus partes occidentales et mare Oceanum consistentes, per vos, seu nuntios vestros, ad id propterea non sine magnis laboribus, periculis et impensis destinatos, repertas et reperiendas in posterum, quæ sub actuali dominio temporali aliquorum dominorum christianorum constitutæ non essent, cum omnibus illarum dominiis, civitatibus, castris, locis, villis, juribus et jurisdictionibus universis, vobis hæredibusque et successoribus vestris Castellæ et Legionis regibus, in perpetuum, motu proprio et ex certa scientia ac de apostolicæ potestatis plenitudine donavimus, concessimus et assignavimus, prout in nostris inde confectis litteris plenius continetur. *Cum autem alias nonnullis Portugalliæ regibus qui in partibus Africæ, Guineæ et Minere auri, ac alias insulas etiam in similibus concessione et donatione apostolica eis facta reperierunt et acquisierunt, per Sedem apostolicam diversa privilegia gratiæ, libertates, immunitates exemptiones, facultates, litteræ et in-*

dulta concessa fuerint, nos volentes etiam, prout dignum et conveniens existit, vos hæredesque et successores vestros prædictos non minoribus gratiis, prærogativis, et favoribus prosequi, motu simili, non ad vestram vel alterius pro vobis super hoc oblatæ petitionem instantiam, sed de nostra mera liberalitate ac eisdem scientia et apostolicæ potestatis plenitudine, *vobis ac hæredibus et successoribus vestris prædictis, ut in insulis et terris per vos seu nomine vestro hactenus reperta hujusmodi et reperiendis in posterum omnibus et singulis gratiis, privilegiis, exemptionibus, libertatibus, facultatibus, immunitatibus, litteris et indultis regibus Portugalliæ concessis hujusmodi, quorum omnium tenores ac si de verbo ad verbum præsentibus inscirentur haberi volumus pro sufficienter expressis et inscertis, uti, potiri et gaudere libere et licite possitis et debeatis in omnibus et per omnia perinde ac si illa omnia vobis et hæredibus et successoribus vestris prædictis specialiter concessa fuissent, auctoritate apostolica tenore præsentium de specialis dono gratiæ indulgemus, illaque in omnibus et per omnia ad vos hæredesque ac successores vestros prædictos extendimus parter et ampliamus*, ac eisdem modo et forma perpetuo concedimus, non obstantibus constitutionibus et ordinationibus apostolicis, nec non omnibus illis quæ in litteris Portugalliæ regibus concessis hujusmodi concessa sunt, non obstantibus ceteris que contrariis quibuscumque Verum, quia difficile foret præsentes litteras ad singula quæque loca in quibus expediens fuerit deferri, volumus, ac motu et scientia similibus decernimus, quod illarum transumptis, manu publici notarii inde rogati subscriptis et sigillo alicujus personæ in ecclesiastica dignitate constitutæ, seu curiæ ecclesiasticæ, munitis, ea prorsus fides inadibia in judicio et extra ac, ubi, ubilibet adhibeatur, quæ præsentibus adhiberetur, si essent exhibitæ vel ostensæ Nulli ergo omnino hominum liceat hanc paginam nostræ exhortationis, requisitionis, donationis, assignationis, investituræ, facti, constitutionis, deputationis, mandati, inhibitionis, nostrorum indulti, extensionis, ampliationis, concessionis, voluntatis et decreti infringere, vel ei ausu temerario contraire Si quis autem hoc attentare præsumpserit, indignationem omnipotentis Dei ac beatorum Petri et Pauli apostolorum ejus se noverit incursurum Datum Romæ, apud sanctum Petrum, anno incarnationis dominicæ millesimo quadringentesimo nonagesimo tertio, quinto nonas maii, pontificatus nostri anno primo

TRANSLATION

Alexander, Bishop, Servant of the Servants of God, to the illustrious sovereigns, our very dear son in Christ, Ferdinand, King, and to our very dear daughter in Christ, Isabella, Queen, of Castile, Leon, Aragon and Granada Health and apostolic benediction

The sincerity of distinguished devotion and the soundness of faith, by which you reverence us and the Roman Church, justly deserve that we should approvingly grant you those things which may enable to follow up your holy and praiseworthy purpose, and the enterprise undertaken for seeking out remote and unknown lands and islands, day by day tending more to the glory of Almighty God, the propagation of the kingdom of Christ, and the exaltation of the Catholic faith

Now, therefore, we, of our own motion from certain knowledge and out of the fulness of apostolic power, have given, conceded and assigned unto you, and your heirs and successors, the Kings of Castile and Leon, in perpetuity, all and singular the remote and unknown mainlands and islands, situated towards the regions of the West and the main ocean, which are not under the actual temporal dominion of some Christian master, discovered and to be hereafter discovered, by you or your emissaries sent for that purpose, not without great labour, danger and expense, together with all their lordships, cities, fortresses, places, farms, rights and jurisdictions, as is set forth more fully in our letters drawn up for that purpose

And since, at other times, divers privileges, favours, liberties, immunities, exemptions, faculties, letters and indults were conceded, by the apostolic See, to several Kings of Portugal, who, in the regions of Africa, Guinea

and the Gold mine, have discovered and acquired other Islands, under similar grant and concession made to them by the Apostolic See, we, desiring to bestow, as is worthy and becoming, also upon you and your heirs and successors aforesaid gifts, prerogatives and favours to a not less extent, of our like motion, not at your instance or that of any other person on your behalf by petition made to us about this matter, but of our own simple liberality and with the same knowledge and fulness of apostolic power grant, by apostolic authority according to the tenor of these presents, by a gift of especial grace, to you and your heirs and successors aforesaid, that, in the islands and lands up to the present time discovered by you or in your name and in future to be discovered, you may use, hold and freely enjoy all and singular the gifts, privileges, exemptions, liberties, faculties, immunities, letters and indults as granted to the Kings of Portugal, the purport of all which grants we ordain shall be held expressed and inserted herein, as sufficiently as if they were recited word by word in these presents, and that you may and should lawfully, in all things and in all respects, so hold them as if they had all been specially conceded to you and your heirs and successors aforesaid, and we extend and enlarge them, in all things and all respects, equally to you and your heirs and successors aforesaid and we grant them, in the same manner and form, in perpetuity, notwithstanding apostolic constitutions and ordinances and all those things which, in the letters granted to the Kings of Portugal, have been so conceded, and notwithstanding all other things to the contrary

But, since it would be difficult for these letters to be carried to all places which may be expedient, we will and, with like motion and knowledge, decree that to copies of them, signed by the hand of a public notary employed for that purpose and authenticated by the seal of some official person of ecclesiastical dignity or of an ecclesiastical court, the same entire faith shall be given, in courts of justice and outside them and in all other places, which would be given to these presents if they were exhibited or shown

Therefore, let no man whomsoever infringe this charter of our exhortation, requisition, donation, assignment, investiture, deed constitution, allotment, concession, will and decree, or, with rash audacity, contravene it But if anyone should presume to make the attempt, be it known to him that he will incur the indignation of Almighty God and of the blessed apostles Peter and Paul

Given at Rome, at St Peter's, in the year of the incarnation of Our Lord 1493, on the third day of May, in the first year of our pontificate

APPENDIX C (BULL D)

Bull said to have been issued by Alexander VI and dated September 25, 1493, as printed in the "Fonti Italiani" No trace of any original having been found, it was copied into that collection from Solorzano "De Indiarum Jure,' Madrid, 1629 The Latin version is supposed to be a re-translation by Solorzano from a Spanish version made by one of the secretaries of Philip II, A D 1551

ALEXANDER episcopus, servus servorum Dei, charissimo in Christo filio Ferdinando regi et charissimæ in Christo filiæ Helizabeth reginæ Castellæ, Legionis, Aragonum et Granatæ, illustribus, salutem et apostolicam benedictionem Dudum siquidem omnes et singulas insulas et terras firmas inventas et inveniendas versus occidentem et meridiem, quæ sub actuali dominio temporali aliquorum dominorum christianorum constitutæ non essent, vobis heredibusque et successoribus vestris Castellæ et Legionis regibus in perpetuum motu proprio et de certa scientia ac de apostolicæ potestatis plenitudine donavimus, concessimus et assignavimus vosque ac heredes et successores prefatos de illis investimus, illarumque dominos cum plena, libera et omnimoda potestate, auctoritate et jurisdictione constituimus et deputavimus, prout in nostris inde confectis litteris, quarum tenorem, ac si de verbo ad verbum præsentibus inserierentur, haberi volumus pro sufficienter expressis, plenius continetur Cum autem contingere posset quod nuntii et capitanei aut vassalli vestri versus occidentem et meridiem navigantes, ad partes orientales applicarent, ac insulas et terras firmas, quæ inde fuissent vel essent reperirent, nos volentes etiam vos favoribus prosequi gratiosis, motu et scientia ac potestatis apostolicæ plenitudine similibus, donationem, concessionem, assignationem et litteras prædictas, cum omnibus et singulis in eisdem litteris contentis clausulis ad omnes et singulas insulas et terras firmas inventas et inveniendas, ac detectas et detegendas, quæ, navigando aut itinerando versus occidentem aut meridiem hujusmodi sint vel fuerint aut apparuerint, sive in partibus occidentalibus vel meridionalibus et orientalibus et Indiæ existant, auctoritate apostolica, tenore præsentium in omnibus et per omnia, perinde ac si in litteris prædictis de eis plena et expressa mentio facta fuisset, extendimus pariter et ampliamus Vobis et hæredibus et successoribus vestris prædictis per vos, vel alium seu alios, corporalem insularum ac terrarum prædictarum possessionem propria auctoritate libere apprehendendi ac perpetuo retinendi, illasque adversus quoscumque impedientes etiam defendendi, plenam et liberam facultatem concedentes, ac quibuscumque personis etiam cujuscumque dignitatis, status, gradus, ordinis vel conditionis, sub excommunicationis latæ sententiæ, pena, quam contrafacientes eo ipso incurrant, districtius inhibentes, ne ad partes prædictas ad navigandum, piscandum, vel inquirendum insulas vel terras firmas, aut quovis alio respectu seu colore, ire, vel mittere quoquomodo præsumant, absque expressa vel speciali vestra ac hæredum et successorum prædictorum licentia Non obstantibus constitutionibus et ordinationibus apostolicis, ac quibusvis donationibus, concessionibus, facultatibus et assignationibus per nos vel prædecessores nostros, quibuscunque, regibus vel principibus, infantibus, aut quibusvis aliis personis, aut ordinibus et militiis de prædictis partibus, maribus, insulis atque terris, vel aliqua eorum parte, ex quibusvis causis, etiam pietatis vel fidei aut redemptionis captivorum, et aliis quantumcunque urgentissimis, et cum quibusvis clausulis etiam derogatoriarum derogatoriis, fortioribus, efficacioribus et insolitis, etiam quascunque sententias, censuras et penas in se continentibus, quæ suum per actualem et realem possessionem non essent sortitæ effectum, licet forsan aliquando illi quibus donationes et concessiones hujusmodi factæ fuissent, aut eorum nuntii, ibidem navigassent Quos tenores illarum etiam præsentibus pro sufficienter expressis et insertis habentes, motu, scientia et potestatis plenitudine similibus omnino revocamus, ac quoad

terras et insulas per eos actualiter non possessas pro infectis haberi volumus, necnon omnibus illis quæ in litteris prædictis volumus non obstare, cæterisque contrariis quibuscunque

Datum Romæ, apud sanctum Petrum anno incarnationis dominicæ millesimo quadringentesimo nonagesimo tertio Sexto kalendas octobris, pontificatus nostri anno secundo

TRANSLATION

ALEXANDER, Bishop, Servant of the Servants of God, to the illustrious sovereigns, his very dear son in Christ Ferdinand, the king, and to his very dear daughter in Christ, Isabella, the queen of Castile, Leon, Aragon and Granada—Health and apostolic benediction

Whereas, a while ago, we, of our mere will, certain knowledge and in the fulness of our apostolic power, gave, conceded and assigned in perpetuity, to you and your heirs and successors, the kings of Castile and Leon, all and singular the islands and mainlands discovered or to be discovered towards the west and south which were not under the actual temporal dominion of some Christian master, with these we invest you and your heirs and successors aforesaid, and we have constituted and appointed you as lords of those regions, with full, free and entire power, authority and jurisdiction, as set forth more fully in our letters drawn up for that purpose, the purport of which letters we ordain to be held as completely expressed as if they were recited in these present letters, word for word

Since, moreover, it may happen that your emissaries, captains, or vassals, when sailing towards the west and south, may turn towards the eastern regions and find islands and mainlands which are, or were, to that quarter pertaining, wishing to follow up our gracious favours to you by similar favours, we, of our will, knowledge and fulness of apostolic power, equally extend and enlarge, with apostolic authority, by the tenor of these presents, in everything and in all respects, the same as if in the aforesaid letters full and express mention had been made of them, the donation, concession assignment and letters aforesaid, with all and singular the clauses contained in the same letters, to apply to all and singular the islands and mainlands found and to be found, discovered and to be discovered, which in sailing or journeying in this manner towards the west or south may be, or shall be, or shall appear, whether they actually are in western or in southern and eastern regions or in India

Granting to you and to your heirs and successors aforesaid, the full and free faculty of taking and perpetually holding, freely of your own authority, by yourselves or by another or others, bodily possession of the aforesaid islands and lands, and also of defending them against all persons who may obstruct, and most strictly prohibiting all persons soever, even of any dignity soever, or status, rank, order, or condition, under penalty of excommunication (latæ sententiæ) which transgressors by the very act will incur, from presuming to go, or send to the said part, to navigate, fish, or seek out islands or mainlands, under any pretext, without the special and express license of you and your aforesaid heirs

Notwithstanding constitutions and apostolic ordinances and any donations, concessions, faculties and assignments, made by ourselves or our predecessors to all persons whomsoever, to kings or princes, to persons of royal houses (infantibus), or any other persons, to regular orders and to military orders, for the aforesaid regions, seas, islands and lands or for any part of them, without regard to the causes of the grant, even if for objects of piety, or of religion, or of redeeming captives or to other causes of the most urgent nature, and with clauses of whatever kind, even derogations of derogations the strongest most efficacious and unusual, and containing judgments, censures and penalties of any kind which have not come into effect by means of actual and real possession, even supposing that, at some time, those to whom donations and concessions of this nature have been made or their emissaries may have sailed there

Moreover, holding that the tenor of those letters are sufficiently expressed and inserted in these presents, we revoke them altogether by similar will, knowledge and apostolic power and we will them to be held as never made, in so far as they refer to lands and islands not actually in possession, and so we have decreed notwithstanding everything in the aforesaid letters and all other things to the contrary

Given at St Peter's at Rome in the year of our Lord 1493, on Sept 25th, and in the second year of our pontificate

APPENDIX D

Correspondence between the Sovereigns of Spain and Jaime Ferrer concerning the position and the best manner of laying down the line of demarcation of the treaty of Tordesillas, signed June 7, 1494 Extracted from Navarrete *Coleccion de los Viajes*, vol 2, p 111 Translated with the aid of an official expert translator of Spanish

January 27, 1495

To the very high and very puissant Sovereigns of Spain, &c , by the grace of God our very righteous lords

Very high and very powerful Sovereigns Don Juan de la Nussa, Lieutenant of your Highnesses, has twice shown me some instructions in which your Highnesses make known the decision regarding the partition your Highnesses have made with the most illustrious king of Portugal upon the Ocean, starting from Cape Verde in a westerly line for a distance of three hundred and seventy leagues, and therefore, very high and most serene Sovereigns, I have examined (the subject) to the extent of my humble understanding, although late, and not so soon as I had wished, on account of a slight illness, and therefore I send to your Highnesses, by a man of mine, a figure of the world on a large scale on which may be seen the two hemispheres, to wit, our Arctic and the opposite Antarctic one And likewise you will see the equinoctial circle and the two tropics of the declination of the sun, and the seven climates, and each one of these circles put in its proper place as in the *treatise on the sphere* and in the *situ orbis* learned men direct and divide into degrees And, in order that the distance may more clearly be seen of the said three hundred and seventy leagues and how far they extend in a westerly line starting from the said Cape Verde, I have intersected the said distance from pole to pole with red lines, which at the equator are twenty-three degrees apart, and with acute angles, the said lines correspond to the poles of the earth in this figure —

and all that is crossed by yellow lines will be what belongs to the most illustrious King of Portugal, turning in the direction of the Antarctic pole And this distance of sea completes the said three hundred and seventy leagues which are, as I said above, twenty-three degrees starting from Cape Verde in a westerly line

And if in connection with this decision (treaty of partition) your Highnesses should command that I should go thither (to Cape Verde) I will, of my great and obedient love, certainly go at my own expense and without any pay And in very truth my desire is that all I have in this world shall be at the service of your Royal Highnesses—whom may the infinite Trinity ever keep in guard and protection with very long and very prosperous life

From Barcelona, January 27, 1495

Their Catholic Majesties did not understand the above letter, and indeed, if the little figure above may be taken as an indication of what was on the map sent, it is not to be wondered at Ferrer counted the distance as from Cape Verde, whereas it was from the islands off that cape, and he made the

370 leagues equal to twenty-three degrees, or $16\frac{2}{3}$ leagues to each degree on that parallel Very soon after (Feb 28) their Majesties wrote as follows

By the King and the Queen—To Jaime Ferrer, their Subject

The King and the Queen Jaime Ferrer We saw your letter and the inclosure you sent us therein, which seems to us very good We consider your having sent it as a service, but for the understanding of it, it is necessary you should be here, and, for our service, that you should put your coming into effect so that you shall be here at latest on the first of May In which you will do us service

From Madrid on the 28th day of February, 1495

I the King—I the Queen

By order of the King and Queen
Joan de la Parra

There is no date attached to the following formal opinion, but, taken in connection with the preceding letters, it must have been presented sometime during the first half of 1495 It also is in Navarrete (Vol 2 p 113) as follows The calculations and the nautical statements in sections 4 to 6 do not impress the reader with a high opinion of Ferrer's attainments, but that may partly be accounted for by errors in copying or printing

The opinion and judgment of Mossen Jaime Ferrer regarding the Treaty made between the Most Catholic Sovereigns and the King of Portugal, in which is shown that the author was a great cosmographer and a wonderful expert on the sea

1 The manner of determining the terminus or end of the three hundred and seventy leagues, starting from the Islands of Cape Verde on a westerly line is as follows

2 First, it must be noted that the said Cape Verde and its islands lie fifteen degrees from the equator, and it is likewise to be noted that the said 370 leagues, starting from the said islands, comprise to the west eighteen degrees, and each degree on that parallel contains twenty leagues and five-eighths Moreover, it is necessary to make a straight line, in latitude (sic) from pole to pole only in this our hemisphere, intersecting the said parallel exactly at the end of the said eighteen degrees, and everything lying within this line on the left hand, turning towards the side of Guinea, will belong to the King of Portugal, and the other part by the West as far as it turns by the East towards the Arabian Gulf will belong to the Kings our Lords, if their ships first sail thither And this is what I understand by the treaty made by your Highnesses with the King of Portugal

3 And a truth it is and a chief principle in cosmography that in sailing on one same parallel the said terminus can never be ascertained by means of the elevation of the Pole-star (Polus mundi), and the reason is this, that in sailing always by the same parallel the said Pole-star (Polus) maintains the same elevation through all the circumference of the said parallel And that is true

4 Nevertheless, I say, that it is possible and a very certain thing that the said terminus and extremity of the said 370 leagues can be ascertained by the North star by the following rule and practical method

It is necessary for the vessel leaving the Cape Verde islands in search of the said terminus to leave the western parallel or line upon the left hand and to take her course by the quarter of the West towards the Northwest and to continue to sail in that direction until the Pole-star rises eighteen degrees and one-third and then the said vessel will be exactly on the aforesaid line which passes from pole to pole at the extremity of the 370 leagues And from

there it is necessary that the said vessel change and take her course along said line in the direction of the Antarctic pole up to that point where the Arctic pole is fifteen degrees in elevation, and then at that exact end will be the end of the line or parallel which passes through the said Cape Verde and at the end and true terminus of the said 370 leagues, which terminus is very clearly indicated by the elevation of the North star according to the aforesaid rule

5 And because the sailing chart is not wholly useful and does not suffice for the mathematical demonstration of the above rule, a world map in spherical form is necessary, divided into two hemispheres by its lines and degrees, and the situation of the land, islands and sea, each in its own place—which world map I put down together with these expressions of my meaning and opinion the more clearly to demonstrate the truth

And I say that to understand the above rule and practical method it is necessary to be a cosmographer, arithmetician and navigator, or to understand the art, and he who does not possess all these three sciences, cannot possibly understand (the rule) nor (can he succeed) by any other way or rule if he is not expert in the three said sciences

6 And for a further exposition of the above rule it must be known that the quarter of the wind (point of the compass) the vessel takes as its course, starting from the Cape Verde islands at the end of the 370 leagues, will be distant from the western parallel or line seventy-four leagues at the rate of twenty per cent, and because the said quarter (of the wind-rose or compass) inclines towards the North sailing by it the different (increasing) elevation of the pole-star is clearly apparent, and the said seventy-four leagues comprise three degrees and a third of latitude, very nearly

7 It is, moreover, to be noted that pursuing the above rule it is necessary to give to each degree seven hundred stadia, according to Strabo, Alfragano, Teodoci, Macrobi, Ambrosi and Euristhenes (Eratosthenes), since Ptolemy gives only five hundred stadia to a degree And I say further that there is another method of finding the said terminus according to the practice and science of mariners, and it is as follows

8 First, let the sovereigns our lords and the King of Portugal take twenty mariners, ten for each side, the best to be found, and conscientious men, and let them start in one vessel from the Cape Verde islands on a westerly line, and let each one of the said mariners note with great care on his chart, every six hours, the course the vessel makes according to his judgment, and, having been bound under oath, let none of them communicate his opinion to another until the first of the mariners who in his judgment finds himself at the said terminus shall state so to two captains—men of reputation, put on board the said vessel by the will and accord of the said sovereigns And let the said captains then take the opinions and judgments of the other mariners and, if the rest agree with the first who finds himself at the terminus, let them take his decision as conclusive and final as to the said terminus, and if they do not agree with the first, let them take the opinion and judgment of the majority, and after agreeing, let them change the course on a straight line towards the Antarctic pole, and everything they find on the left hand towards Guinea shall belong to the King of Portugal in the manner above stated

This second method is uncertain and may be erroneous because it is based on the simple and sole judgment and opinion of mariners, and the first rule is very certain, (that one) by the elevation of the North star, as is shown above

9 And if in this my decision and opinion any error appear, I will always defer to the correction of those who know and understand more than I, especially to the Admiral of the Indies, who at the present time knows more than any other person in this subject, for he is greatly learned in the theory and admirably practical, as his famous achievements demonstrate, and I believe that Divine Providence holds him as elect to carry out its great mystery and service in this undertaking, which I believe is the disposition and preparation of that (result) which, hereafter, the same Divine Providence will manifest to its great glory—the salvation and good of the world

10 Here is shown the navigation of the Admiral of the Main-land Ptolemy in the eighth book *de situ orbis* says at chapter five

That the true circumference of the earth at the equator is 180,000 stades, at the rate of five hundred stades to a degree according to his calculation, and counting eight stades per mile, are 22,500 miles, which are 5,625 leagues at the rate of four miles per league in Castilian reckoning, each degree coming to fifteen leagues and two hundred and twenty-five parts of three hundred and sixty And in the same Book, chapter five, he says that the circle of the tropics is 164,672 stades, which are 20,584 miles, and 5,146 leagues, making for each degree fourteen leagues and one hundred and six parts of three hundred and sixty Moreover, according to Strabo, Alfragano, Ambrosi, Macrobi, Teodosi and Euristhenes, the said circumference of the earth is 252,000 stades, the which 252,000 stades, at the rate of eight stades per mile, are 31,500 miles, and at four miles per league, are 7,875 leages Item —By the circle of the tropics the circumference is 7,204 leagues and seventy-two thousand parts of one hundred and eighty thousand, and I decided it by the rule of three, saying if 22,500 miles at the equator according to Ptolemy give me 7,875 for the said equator, what will 20,584 miles of the circle of the tropics give me ? And in this way you will arrive at the above 7 204 and a half leagues almost, according to the said learned men

The said circle of the tropics is shorter than the equinoctial circle by 670½ leagues, which is, at four miles per league, 2,682 miles, according to the above calculation summed up and proved throughout That is, however, calculating according as the above-mentioned learned men direct, 700 stades to a degree, although Ptolemy allows no more than 500 stades to a degree, as above said in the already mentioned book, *de situ orbis*

11 Item —It is to be noted that on the equinoctial circle each degree has twenty-one leagues and five parts of eight, and on the tropics each degree has twenty leagues and four parts of three hundred and sixty, according to the said learned men

12 Starting from Cape Verde on a westerly line the terminus three hundred and seventy leagues comprises eighteen degrees, inasmuch as the said line or parallel is fifteen degrees distant from the equator, and therefore the degrees each of them contains twenty leagues and five parts of eight, according to the said learned men

13 From Cape Verde to the Grand Canary island are 232 leagues of four miles per league, and it lies from the said Canary on a meridian almost at a third of the "lebeix" or southwestern quarter, and is distant fifteen degrees from the equator, and the middle island of those which lie in front of Cape Verde lies in the quarter of the West towards the Northwest 117 leagues (away), which are equal to five degrees and two-thirds, and from this middle island commences the terminus of the 370 leagues towards the West which terminus is eighteen degrees towards the West from the said middle island, and on that parallel each degree is twenty leagues and five parts of eight, counting 700 stades to a degree, according to the above cited learned men, although Ptolemy uses a different calculation

14 And according to Ptolemy, each degree of the equator contains fifteen leagues and two-thirds, and of the tropics fourteen leagues and one-third, and on the parallel of Cape Verde fourteen leagues and two-thirds, and therefore the 370 leagues upon that parallel are understood as extending to the West twenty-five degrees and one-third nearly

15 And the Admiral says in his letter that Cape Verde is nine and a quarter degrees distant from the equator According to Ptolemy, I see him allowing fifteen and two-thirds leagues to a degree, nevertheless, I decide with the other learned men as to the distance of the said islands from the equator The division into stades, although the number given by Ptolemy is different from that given by the above cited learned men, Strabo, Alfragano, Macrobi, Teodosi, and Euristhenes, they are all essentially in agrement, because Ptolemy makes use of longer stades, so that his 180,000 stades are equal to the 252,000 stades of the above mentioned learned men for the equinoctial line as above said

APPENDIX E

The table on the next page has been drawn up on the universally accepted basis of the old navigators and geographers, viz, 8 stades equal to 1 Roman mile, and 4 Roman miles equal to 1 Italian league To attempt mathematical exactness would fill it with confusing fractions and make it useless in reading the old authors As an illustration of the near approximation of these equivalents let the last item be taken in the third column If the 20,400 Italian miles be multiplied by 1,618 yards and divided by 2,029 yards and thus reduced into nautical miles, the result would be 16,268 nautical miles against the 16,320 nautical miles of the reckoning in the table by means of stades The difference is thus only fifty-two miles in the whole circumference of the earth This will give the measure of the discrepancy or non-equivalence of the quantities

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NOTES TO APPENDIX E

a Eratosthenes made the circumference to be 250 000 stades, and added 2,000 stades for convenience of division by 360 into degrees without fractions

b Jaime Ferrer (see Appendix D) is reported, as the opinion is given in Navarrete, to have stated that a degree of the equator is 21½ leagues, but if the circumference of 7875 leagues given also in the same opinion, be divided by 360, the result will be 21⅞ leagues There is, therefore, an error in the text or in Ferrer's arithmetic

c Posidonius —I have followed Monn D'Avezac and Sir George Cornewall Lewis in giving 240,000 stades as the measure of the earth's circumference fixed upon by Posidonius In most books it is given as 180,000, on the authority of Strabo It is certain however, that his first opinion was in favour of 240 000 stades This statement is made by his admirer Cleomedes who knew of no other figures Historians reconcile the conflicting statements by assuming that he changed his opinion in later life

d Pytheas of Massilia was a navigator [explorer or merchant], who about the time of Alexander the Great visited the north of Europe He passed outside the Pillars of Hercules, and sailed in the British seas Polybius and Strabo considered him to be an impostor who published his imaginary adventures for truth, but the great Greek geographers accepted his statements so far as to make up their maps on his information Sir George Cornewall Lewis [*Astronomy of the Ancients*, p 407] following his naturally sceptical temperament is inclined to reject his voyages, while, on the other hand, the uncritical optimism of Letronne accepts them fully The truth has probably between these extremes, for certain it is that Pytheas was a man of great enterprise and unusual powers of observation He fixed the latitude of Massilia by means of a gnomon, at 43° 3′ 58″ and as it is in reality 43° 17′ 34″ it is a very remarkable observation to have been made 22 ½ years ago, and there are very few latitudes so nearly correct in all the ancient authors Hipparchus accepted the latitude of Massilia as fixed by Pytheas but when he himself calculated by the gnomon the latitude of Byzantium he fixed it to be the same as Massilia two degrees out of the truth The "impostor" had made a more correct determination than the greatest of the Greek astronomers Pytheas, when in the British seas saw the tides which on the west coast of Britain, as very high in the estuaries of the rivers, and are phenomena most striking to one from the tideless shores of the Mediterranean He moreover, correctly attributed them to the influence of the moon

The particular interest of Pytheas in relation to the subject of this paper, is the belief of Letronne that he estimated a degree to be 600 stades—almost the exact equivalent of 60 geographical miles Pytheas does not however appear to have made any direct statement to that effect It is an inference from his estimation of the distance between Orcas in 61° and Thule in 66°, which was also given as six days' sail directly north, or 3000 stades The figures are rounded out too much to be made the basis of serious calculation

e Magellan gave this opinion to King Ferdinand just before sailing on his great voyage in A D 1519

f Enciso —See *ante*, p 511 for a discussion of Enciso's opinions

g This was, in fact, the opinion of both Spanish and Portuguese navigators and diplomatists whenever the leagues of the treaty of Tordesillas came up for discussion subsequent to the convention at Badajoz

Authorities.	Stadia		Nautical miles.		Italian leagues		Italian miles	
	[illegible]	Each degree.	Equatorial circumference	Each degree	[illegible]	[illegible]	[illegible]	Each [illegible]
Estimations in excess of truth.								
Aristotle [illegible]	B.C. [illegible]	300,000	1111·1	40,000	111·1	12,500	34·7	50,000	138·8
Archimedes [illegible]	B.C. 214	300,000	833·3	30,000	83·3	9,375	26·0	37,500	104·1
Eratosthenes [illegible]	B.C. 240								
Hipparchus [illegible]	B.C. 160								
Strabo [illegible]	B.C. 24	252,000	700·0	25,200	70	7,875	21·875	[illegible]	87·5
Pliny [illegible]	A.D. [illegible]								
Ptolemy [illegible]	A.D. 130?								
Eusebius [illegible]	B.C. [illegible] 8	[illegible]	666·6	24,000	66·6	[illegible]	18·5	[illegible]	74·0
Pytheas of Marseilles	B.C. 340	〃	〃	〃	〃	〃	〃		
[illegible]		216,000	600	21,600	60	6,750	18·75	27,000	75
Estimations in excess of truth.									
[illegible]	A.D. [illegible]								
Enciso (practical opinion)	A.D. 1519								
[illegible]	A.D. [illegible]								
Thomas Duran (at Badajoz)	A.D. 1524	201,600	560	20,160	56	[illegible]	17·5	[illegible]	70
Juan Vespucci (at Badajoz)	A.D. 1524								
[illegible]	A.D. [illegible]								
Cosmographer	A.D. [illegible]								
[illegible]	A.D. [illegible]								
Opinion, *circa* A.D. 1500, in round numbers of Italian leagues and miles		[illegible]	[illegible]	19,200	53·33	[illegible]	16·66	24,000	66·66
Posidonius (later opinion)	B.C.								
Marinus of Tyre, *circa*	A.D. 120	180,000	[illegible]	18,000	50	[illegible]	[illegible]	[illegible]	[illegible]
Ptolemy, *circa*	A.D. 150								
Opinions based on Arabian measurements.									
[illegible]	A.D. [illegible]								
Cardinal D'Ailly	A.D. 1410	[illegible]	[illegible]	16,320	45·33	[illegible]	14·17	20,400	56·67
Christopher Columbus	A.D. 1492								
Fernan Columbus	A.D. 1524								

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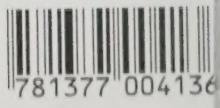

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